

## E-PROCEEDING



# 6th INTERNATIONAL INVENTION INNOVATION AND DESIGN COMPETITION 2017

Innovation in The Quest For Excellence









Casuarina@Meru, Ipoh, Perak Darul Ridzuan, Malaysia

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### Pengenalan 6TH International Invention, Innovation and Design Competition (INDES 2017)

Bagi merealisasikan Rancangan Malaysia ke-10 (RMK 10) dalam usaha membudayakan inovasi, UiTM (Perak) menganjurkan program tahunan bertaraf antarabangsa yang dikenali sebagai "International Invention, Innovation and Design Competition 2017" (INDES 2017). Tahun ini menyaksikan penganjuran kali ke 6 yang bertemakan "Innovation in The Quest for Excellence".

INDES 2017 telah mendapat sambutan yang hebat dan telah mendapat 150 penyertaan yang terdiri daripada pensyarah dan pelajar dari universiti tempatan dan luar negara, industri, penyelidik dan pelajar sekolah. Program ini menjadi medium untuk mempersembahkan dan mempamerkan ciptaan, inovasi dan rekaan mereka kepada umum serta mendapatkan maklum balas bagi terus memperbaiki dan memperkukuhkan produk tersebut. Pertandingan ini juga menggalakkan inovasi dan rekaan yang berunsur keusahawanan, selaras dengan matlamat Fakulti Perakaunan dan KPT.

Pada julung kalinya, INDES 2017 mempertandingkan inovasi dalam lima bidang iaitu Hijau dan Kelestarian, Seni dan Pelancongan, Pendidikan, Keusahawanan dan Produk dan Teknologi Pertanian

Penganjuran pertandingan ini adalah simbol kesungguhan UiTM yang mementingkan peningkatan dan penambahbaikan serta terus berusaha untuk membudayakan inovasi dan kreativiti. Ini juga selari dengan objektif UiTM untuk mewujudkan jalinan kerjasama dengan pihak luar yang dapat memberikan manfaat kepada warga UiTM dan negara amnya.

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### **ABSTRACTS**

## ART AND TOURISM

## VISUAL LEGENDARY PERAK MELALUI SET PINGGAN MANGKUK

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#### **Abstrak**

Projek inovasi visual set pinggan mangkuk merupakan inspirasi dari mitos, lagenda dan sejarah negeri Perak. Lakaran visual yang memaparkan penceritaan yang menarik perhatian dan seterusnya menjadikan memori yang berkesan terhadap orang yang melihatnya. Inovasi ini bertujuan sebagai medium perhubungan antara alatan dan masyarakat dimana apabila peralatan yang kerap dan menjadi kegunaan utama dijadikan perantara untuk mendidik dan memberi peringatan melalui visual. Diantara kisah yang terkenal di negeri Perak ini adalah kisah sumpahan ikan Tapah. Sumpahan ini dilakukan oleh Pak Kaduk ianya adalah disebabkan beliau merasa terhutang budi dengan ikan tersebut yang membantunya menyelesaikan masalah kesempitan hidup melalui kerongsang emas didalam perut ikan tersebut dan sumpahan tersebut adalah mengharamkan keturunannya memakan ikan Tapah selama 7 kelahiran. Kisah ini mungkin tidak lagi popular dikalangan anak-anak muda kerana ianya merupakan kisah yang telah lama dan dianggap sudah ketinggalan zaman. Disinilah keperluan inovasi ini dimana ia dapat mengembalikan ingatan serta memberitahu dan mengingatkan kembali generasi kini akan kisah yang penuh pengajaran. Produk ini juga boleh dijadikan cenderahati buat pelancong dan seterusnya akan dapat mempopularkan kisah-kisah di negeri Perak di mata dunia sebagai satu tarikan budaya dan keunikan. Berdasarkan projek yang dihasilkan ini adalah dipercayai produk ini berpotensi untuk dikomersialkan kerana nilai estetikanya, konsep penggunaan bahan set pinggan mangkuk yang digemari oleh pelancong-pelancong daripada dalam dan luar negara kerana keunikkannya dan ini juga seterusnya dapat memartabatkan warisan Negara umumnya dan negeri Perak khasnya.

Kata Kunci: pinggan mangkuk, kisah mitos, pendidikan, promosi.

## WAREHOUSE FOR ARCHITECTURAL INFORMATION TECHNOLOGY ON HERITAGE (WARITH)

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#### **ABSTRAK**

Pelbagai inovasi aplikasi secara *on-line* telah dibangunkan oleh pelbagai pihak dalam usaha untuk menambah baik produktiviti dalam proses Pengajaran dan Pembelajaran (PdP). Salah satu aplikasi secara *on-line* yang harus diteliti dan diberi perhatian dalam meningkatkan proses PdP ialah mengenai simpanan projek hasil kerja secara visual yang mampu digunakan secara efektif dan berkesan oleh pensyarah dan pelajar kursus Lukisan Terukur dalam program Senibina di Politeknik Malaysia. Hasil kerja pelajar ini merupakan hasil bernilai yang dapat dijadikan sebagai simpanan direktori warisan dan pelancongan di Malaysia. Justeru, inovasi baharu bagi membangunkan *Warehouse of Architectural Information Techniology of Heritage* (WAriTH) adalah satu usaha proses transformasi PdP daripada kaedah konvensional kepada kaedah digital *online* untuk sistem simpanan data visual, pengenalpastian dan pencarian hasil projek lebih sistematik, anti plagiarism, penjimatan kos pelajar, perolehan bahan rujukan tanpa batas masa dan tempat, pengktirafan hak cipta intelek para pelajar. Inovasi ini menunjukkan bahawa kaedah aplikasi ini dapat menyelesaikan beberapa masalah dalam kursus Lukisan Terukur program Senibina di Politeknik Malaysia.

**Kata kunci**: simpanan data visual, aplikasi on-line, warisan, senibina

## DIGITAL INTERPRETIVE MEDIA APPLICATION FOR SELF-GUIDED TOUR AT KUCHING HERITAGE TRAIL

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#### **ABSTRACT**

The traditional media such as signage, panels and brochures still dominated the type of non-personal interpretive media in Kuching Heritage Trail. However, these traditional media are no longer interesting for visitors. Recent advances in interpretation include the use of digital interpretive media on site. This study aims to introduce the application of Quick Response (QR) codes as an alternative to the current text-rich panels and brochure in delivering information for self-guided tour at heritage site. The traditional media that functions as a prime content delivery medium will be upgrading with QR Codes to offer visitors a richer online experience. Visitors will have access to interpretation on their own device as the QR codes will link them to the mobile-friendly website which provides detailed information and images of the site. This effort is to limit the use of paper that associated with litter and to practice more environmentally responsible approach to trail interpretation. Additionally, the small size of the code will not cause a disturbance if put on interpretive boards or panels. For an interpretation to be effective, the choice of interpretive media is essential as it influences visitor satisfaction. It is hoped that this study will provide an important resource to make an informed decisions about future investment in the application of digital interpretive at heritage trail.

Keywords: Digital interpretive media, heritage interpretation, QR Code, heritage trail

## ERGO-AESTHETIC APPROACH THROUGH SENSES AND BEHAVIOURAL ASSESSMENT

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#### **ABSTRACT**

In general, the concept of ergo-aesthetic discloses the equilibrium of human behavioural character with form, shape, and symbolism inside a designed product. In fact, this harmony synthesis can be achieved throughout responses of behaviours and senses inside a design process. Through the adaptation of ergo-aesthetic, humans will be able to achieve greater satisfaction with the designed product as they will positively interact and respond proportionally to it. In this context, ergo-aesthetic principles will replace the traditional method of evaluating and adapting ergonomic and aesthetic into the design process to achieve a better output product. Essentially, ergonomic and aesthetic are fundamental components that need to be considered throughout the design process procedures. The synergy between these two aspects may facilitate in optimizing the efficiency of the design process which will contribute to a higher output quality. Additionally, behaviour and culture are also significant as they function as bonding agents for ergonomic and aesthetic to merge harmonically. Thus, implementing ergo-aesthetic principles into the design process through behaviour and cultural perspectives may lead to the enhancement of the output quality of a product.

Keywords: Design process, ergo-aesthetic, senses.

### VISCERAL DESIGN KIT: THE COMPREHENSIVE SOLUTION FOR GAME GRAPHIC DESIGN

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#### **ABSTRACT**

Visceral level involves reaction triggered by visual appeal which fast in nature and involves physiological response that devoid of reasoning. Visual appeal comprises the aesthetic qualities that capable to stimulate human emotional response. In the context of human-computer interaction (HCI), the term of visual aesthetics is used and constantly mentioned as an integral part of stimulating user's emotion during the interaction process. This is also applicable in the context of digital games as visual aesthetics indeed playing a significant role in stimulating players' emotion while in game playing events. Based on the research in the notion of player-centric emotional design, several attributes and characteristics of visual aesthetics were identified specifically for digital games. Besides, a list of guiding principles of visceral level player-centric emotional design has been made. Therefore, the visceral design kit was developed as a manifestation for the research findings and becomes a comprehensive solution for graphic designers to endeavour creatively in the game design field. Graphic designers could use this design kit when designing graphics within the pre-production stage of game design process. Moreover, the visceral design kit would indicate the digital games are worth making by evoking players' emotion through their visceral level.

Keywords: Visceral level, player-centric, visual aesthetics, emotion, digital games

#### MALAY FOLK TUNES TO NEW MUSIC

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#### **ABSTRACT**

History has shown that it is a common practice for composers to utilize folk tunes as the thematic basis of their art music compositions. This can be seen in major works by great composers such as Wolfgang Amadeus Mozart, Bella Bartok, Jean Sibelius, Frédéric Chopin and many other great composers. However, in Malaysia the practice of using folk tunes as the thematic basis is very minimal as the common practice is only to reproduce the folk tunes by reharmonizing them or creating new arrangements rather than using them to produce new musical works. Therefore, the project aims to create new compositions that are inspired by Malay folk music by means of constructing the compositions based on the basic ideas or motives. The process involves taking thematic materials of a certain Malay folk tune, be it the rhythmic or the melodic feature and developing or varying them into a new composition. The compositions are set to 4 different instrumentations – piano solo, voice and gamelan, string quartet and SATB choir. The implications would be that by creating new compositions inspired by Malay folk tunes, future generations of composers in Malaysia will have an insight of how traditional elements and national identity can be incorporated in their new creations. Furthermore, the use of Malay folk elements in art music is an initiative task to re-discover and uplift the folk music in Malaysia in a new and innovative way.

**Keywords**: Malay folk tunes, new music, thematic material, innovation

#### **P-TOUR**

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#### **ABSTRACT**

Nowadays, the mobile phone is compulsory. Other than using it as a phone, it also can be used to gather information. The development of technology and the increasing usage of mobile phone give large advantages to the tourism industry. One of the new applications in the mobile phone is Augmented Reality (AR). AR is the integration of physical and virtual contact using the current technology generated by a computer based system in order to represent the real world characteristics. Utilization of AR in tourism industry using mobile phones can give new perspective in the tourism industry. P-Tour apps can be used to access information and gain knowledge about tourist attraction places in Perak same as a digital tourist guide. Information of the places is superimposed on top of real view by pointing the mobile phone at the places. At the same time, it can enhance the tourist experience exploring Perak interactively. Utilization of P-Tour apps can encourage the tourism industry in Perak.

**Keywords**: Augmented reality, tourism, mobile apps

#### BABY JOY TRAVEL BAG

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#### **ABSTRACT**

As demand for self-service throughout the travel process continues to increase, innovative travel bag becomes a necessary product since it further empower the passengers and improve the efficiency of travelling process. This travel companion bag is an idea of the futuristic travelling bag where it has many modern features that will have great advantage not just for the passengers but also to the airport and airline companies. This bag is equipped with GPS which make easy for passengers to locate the location to travel and save time in searching for the missing bag. In addition, the bag also has scan code application where it allows passenger quick communication with airlines check-in. Other than that, it has self-weighing function. By simply pressing a button once the bag has been packed, the weight is readable through built-in display. This will help passengers to avoid luggage weight limit problems. Despite the modern features, the bag also has a good compartmentalization for tablet and laptop, a vacuum bag, a water bottle and shoe compartment. Thus, it is hoped that packing and travelling becomes easy and hassle free.

Keywords: Travel bag, passengers, efficiency, modern features, compartmentalization

#### INTERACTIVE ARM SOCK

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#### **ABSTRACT**

The concept of art and tourism sounds new but it is definitely as old as tourism itself because for centuries, many societies had already given much appreciation for the arts and culture. Art and tourism covers a big segment of the industry because people do travelling in order to visit around the world, explore and engage in activities related to art festivals and fascinating sceneries. In term of destination choice, visitors and tourists prefer to consume precise information with a smart and attractive way. In addition, they would choose anything regarding to art for various benefits. This interactive arm sock was design to fulfil these following reasons; it is the easiest product to assist traveller, backpacker and tourist to interact among them or with others; it is the fastest tool to convey the information towards disable people especially for the mute and deaf community and it is the safest medium as an emergency signals in difficulty and emergency situations. Interactive arm sock is an arm sock which is a universal icon with glow in the dark feature printed on it. This icon is very easy to understand because it transcend the boundaries of language and country.

Keywords: Interactive arm sock, art, tourist, information.

## **EDUCATION**

#### e-C&C V2

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#### **ABSTRACT**

Academic promotion seeks to recognize and reward excellent staff. In Universiti Teknologi MARA, all academic staffs are eligible and encouraged to apply for academic advancement. Contributions to teaching, research, and service are all highly valued. The policy, criteria and process of promotion are outlined in the Guideline on Promotion Matters of UiTM Lecturers (Amended 1/2008) (Garis Panduan Urusan Kenaikan Pangkat Pensyarah UiTM (Pindaan 1/2008). Every application received for promotion will go through a thorough evaluation process which conducted by the university special promotion committee. Among some important criteria evaluated are Collegiality and Congeniality attributes/traits of the applicants. The current practice is to fill in the Collegiality and Congeniality questionnaire manually and this practice is believed to be inefficient and costly. Due to that, electronic Collegiality and Congeniality (e-C&C) is proposed and designed with the main objective to expedite the evaluation process of Collegiality and Congeniality attributes and to help the management of University in processing the result in real-time basis. Furthermore, form filling process is made easier and more flexible for the candidate's colleagues as e-C&C can be accessed via tablet and smartphone. Finally, e-C&C is in line with the goal towards paperless environment that indirectly will minimise administrative cost of the university.

Keywords: Promotion, Evaluation, Collegiality and Congeniality, e-C&C, Paperless

#### EASY LEARN: INDICES THROUGH GAME APPS

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#### **ABSTRACT**

Indices and logarithms appear in all sorts of calculations in engineering and science, business and economics. Most of the equations we encounter, either in simplified or complex forms are based on them. In fact, they are part of our daily activities, e.g. finance, economics and natural phenomenon, although we use them unknowingly. Indices and logarithm are related to one another and one can change from one form to the other, i.e. one is the inverse of the other. However, the topics are known to be one of the difficult topics to understand since students have to remember few properties to solve a problem. 'Easy Learn' support flipped classroom concept where students viewed the video before the class session, while in-class time is devoted to exercises, projects, or discussions. By visualizing the notes, it helps students to remember the properties easily since it is often more attractive as a means to capture lecture content and present direct instruction. It also builds the interest and motivates the academically weak student. This project was presented and evaluated by Part 1 students. The survey shows that the students accept multimedia technology as one of the teaching methods. An analysis based on student's performance in an assessment is also done to prove the efficiency of this project.

Keywords: indices, logarithm, education, android

## SI TANGGANG: MALAY FOLK SHORT STORY BOARD GAME

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#### **ABSTRACT**

Literature is important in everyday life because it connects individuals with larger truths and ideas in a society. The importance of literature on teaching lies in its ability to foster critical reading, build valuable skills, and expand students' worldviews. Therefore, our team has created a famous Malay Folk Short Story board game to be used by students in understanding the short story and literary elements better. Besides, learning this short story is important for many reasons, including its ability to provide pleasure to readers, to help build experience, to help readers empathize with others and to develop thinking skills. This board game can be used in the classroom and outside the classroom. This innovated product features the interesting game with colourful graphic materials. Therefore, this innovated product is expected to have a good commercial value for students, educators, private and government sectors.

Keywords: literature, Malay folk, short story, board game, value

## THE 3-MINUTES DEBATE

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#### **ABSTRACT**

Classroom debate has been widely used as a learning method especially at the secondary and tertiary level. Classroom debate enhances self-confidence, critical thinking, analytical capabilities, communication skills, and teamwork. Although studies involving debate have been vastly done in the context of learning the second language, psychology, philosophy, and pure science; studies that focus on the impact of classroom debate are still scarce. The '3-minutes debate' proposes quick and witty way of discussion in which students are encouraged to speak spontaneously on chosen subject matters. A properly executed debate exercise can allow students to exert fresh ideas and develop reasoning skills that can improve their communication skills, which could impact their academic performance. This project experiments students' capability to participate in debate exercises during class tutorial. Students were given time to prepare and execute '3-minutes debate', and after the debate exercise, they were given a set of self-assessed rubric to rate their presentation skills. Their ratings were gathered and analysed using Partial Least Square Analysis (PLS) 2.0.

*Keywords*: debate, classroom debate, students' performance.

# THE USE OF ADOBE PHOTOSHOP APPLICATIONS IN ENHANCING STUDENT'S POSTER PRESENTATION

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#### **ABSTRACT**

The final study presentation is a requirement assignment that a student must take the basic course work studio. Students are required to present their results of their analyses and suggestions in the form of posters that have interesting and compelling graphics with information. The posters are also being assessed in terms of graphic, visual and poster layout aspects besides evaluations based on information content. Nowadays, there are various computer applications in the design and production of attractive posters as well as the designing process is also easy, quick and fast. Adobe Photoshop is able to help students in graphic design, visual and poster layout with faster and more exciting because students tend to use computer applications as compared with production of manual works. The objectives of the study are to produce new methods that have specific guidelines for students in designing and producing exhibits poster. The results of this study will improve students' skills in mastering Adobe Photoshop application in producing their work mainly in graphic design, visual and poster layout faster, exciting and creative. This study will focus on the production of a manual or specific guidelines as a reference for students in the production of an exhibition poster which are expected to be more appropriate to programs that allow students to exhibit their work in a poster presentation.

Keywords: Adobe Photoshop Applications, Poster, Exhibition, Students' Skills

# DOLLHOUSE: DEVELOPING STUDENTS'S UNDERSTANDING ON APPLICATION OF ARTIFICIAL LIGHTING AND ARCHITECTURAL ACOUSTIC

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#### **ABSTRACT**

The subject of artificial lighting and architectural acoustic is an integral part of the architecture syllabus that engaged students to study the design of artificial lighting and architectural acoustic approach, analysis of individual preferences and how it will affect human behaviours. The purpose of the project is to create comprehensive study method to improve students' performance in understanding architectural science theory through practical application approach by designing interior fittings of a dollhouse. In execution of the project, two different subjects; architectural science together with reinforced concrete structure; are integrated in designing the same physical model of the dollhouse. In the first phase, students are required to construct the shell and core of the model according to reinforced concrete structure coursework and on the second phase, students are required to design the interior of the same model to create the ambience of the space based on the visual task. In the context of typical classroom, especially as a conventional method of learning, students are usually taught in theories, principles and rules of efficient lighting and acoustic according to academic syllabus. However, in teaching architecture students, the importance of the study is not only by understanding the principles, but also the application of the theory into practise. Thus, constructivist learning approach by integrating theory and principles solution with creativity will develop superficial knowledge to be richer and more meaningful rather than just lectures and tutorials. Therefore, this project intends to explore students' capability and learning development through constructivist approach in enhancing students' creativity and thinking. The project was executed by 30 students of third year undergraduate architecture programme, in which they were divided into groups of 5 to carry out the project. After completion, the outcome of constructivist learning approach will be measured on students' achievement and identify how well the students truly understand the course material. Apart from constructing physical model, each group prepares a report of their study on artificial lighting design approach and selection of material for efficient room acoustic, artificial lighting and architectural acoustic design strategies to create the intended ambience, as well as calculation in achieving the design of the dollhouse. The outcome from this project, students are not only improved their ability to integrate several discipline into their work, students also will apply collaborative learning between themselves to further understand lighting calculation, lumen method theory and the principles of lighting arrangement through scaled model. Hence, the students' performance in understanding the neediness of artificial lighting and acoustic is improved with the experimental learning the design and injection of creativity.

Keywords: Dollhouse, lighting design, Constructivist learning approach, artificial lighting, and architectural acoustic

# GYMMANJI: THE ACCOUNTING CLASSIFICATION GAME

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#### **ABSTRACT**

Based on Malaysia Education Blueprint 2015-2025 (Higher Education), one of the shifts was to develop holistic, entrepreneurial and balanced graduates. It is essential for the graduates to have attributes of successful entrepreneur. One of the efforts taken by Universiti Teknologi Mara (UiTM), is to strengthen the basic knowledge of students particularly in business and accounting subjects. Therefore, Introduction to Financial Accounting (ACC106) course is introduced by Faculty of Accountancy in order to provide students with the basic accounting as it will be useful for those who one to become an entrepreneur. As an accounting lecturer, it was found that students are having difficulties in understanding this subject especially when they have to classify the accounts correctly. This is worrisome since they need to have a strong basic financial accounting knowledge. This board game was designed to help students to categorize accounting elements based on the business model. From the business model created, students are required to pick the business item miniatures and classify them accordingly. Students will be given marks for every correct answer. The contribution of this board game, students will get exposure on how business operate and able to apply the basic accounting knowledge in a real life situation.

Keywords: Entrepreneur, accounting education, games, accounting elements

# EXPERIENTIAL VIRTUAL PLACE (EVP): INTERACTIVE VIRTUAL ENVIRONMENT FOR AN ENHANCED LEARNING EXPERIENCE

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#### **ABSTRACT**

Emerging technology breakthroughs in areas such as artificial intelligence, virtual reality, the Internet of Things (IoT), robotics and 3D manufacturing are some of the components in the realisation of the Fourth Industrial Revolution. Education is another area which is taking advantage of the current trends of disruptive technology, moving towards a more flexible teaching and learning approach. In built environment education, digital 3D models are often used to replicate the physical environment to convey ideas of place, be it buildings or the landscape. However, 3D models are often "lifeless" and lack the elements that constitute place itself. Experiential Virtual Place (EvP) project aims to provide an interactive virtual learning experience in place making, taking full advantage of immersive virtual reality hardware and game-engine-based interactive contents. The EvP recreates a sample of a place of interest such as a real historical setting, and "transport" the user to the virtual place. Users will be able to explore the virtual environment in real-time while experiencing the sights and sounds of the simulated activities in a fully immersive setup. The EvP also aims to support a diverse range of applications and disciplines in experiential learning using virtual reality and game engine technologies.

Keywords: Virtual place, virtual reality, game engine, experiential learning

# GRADUATE RESEARCH COMPETENCY (GRC) MODEL

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#### **ABSTRACT**

In the world of higher education, besides the burden of teaching and doing administration works, university lecturers are also entrusted to be active in research and publication. However, most of the students' assignments are not tailored to be published, most are discarded at the end of the semester. Thus, their efforts are wasted because they were unable to contribute to the advancement of knowledge. Additionally, students are only exposed to research methodology topic in the final year. These practices did not contribute much to both lecturers and students. As such, we are introducing an effective model of teaching and learning called the Graduate Research Competency Model. The effectiveness of this teaching model has been tested on 23 first degree students who are taking the Hospitality Information Technology and E-Commerce courses. As a result, all students have successfully completed their assignments in a short time, present their assignments at an international conference, and publish the assignments in the indexed journals. In conclusion, this teaching model is expected to help in producing more creative, innovative and competitive graduates. It also increases the number of lecturers' publications in the indexed journal for the benefit of the university.

**Keywords**: Hospitality, Graduates, Research, Publication, Competency

## **ECA: BABY STEPS FOR NEWBIES**

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#### **ABSTRACT**

Elemental Cost Analysis (ECA) is a systematic breakdown of cost data for buildings, intends to assist consultant teams in the preparation of cost planning for new buildings. It summarises project cost information from contract Bills of Quantities, and allocates the costs to the relevant elements, aiming to establish cost targets and cost limit in designing new buildings. Due to lack of uniformity in building projects, it is an effective approach to compare a few ECA of different buildings, but of similar type, to obtain better estimation for future building costs. Therefore, it is crucial for consultant teams to acquire sufficient database on cost information in order to evaluate better for a wide range of building types. Hence, our purpose is to develop an application for preparation of ECA in a simple and efficient approach, based on the awarded projects' tender documents. This user friendly ECA application offers a comprehensive guide for the preparation of ECA from the beginning to the end, which consists of Form 1, Form 2 and Form 3. This ECA application is developed based on the Standard Forms of ECA by Building Cost Information Centre of Royal Institute Surveyors Malaysia to ensure compatibility with information obtained from other sources.

Keywords: Elemental Cost Analysis, cost planning, cost limit, cost targets, estimation

#### RESOURCE DESCRIPTION AND ACCESS STANDARD: E-MODULE

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#### **ABSTRACT**

The Resource Description and Access Standard (RDA) is a new standard that replacing Anglo American Cataloging Rules (AACR). Cataloger needs to adapt to the new rules and terminology employed by this new standard. This RDA was developed with the principles and foundation of Functional Requirement for Bibliographic Records (FRBR) and Functional Requirement for Authority Data (FRAD). RDA is compatible with other cataloging standard include Anglo American Cataloging Rules, International Standard Bibliographic Description (ISBD) and Machine Readable Catalog Standard (MARC 21) for bibliographic data as an encoding standard. The module was develop to assist catalogers on learning the similarities and differences of the new standard. By using the module, catalogers will learn quickly about the new standard and enable cataloger to perform cataloging activities based on RDA Standard.

*Keywords*: Resource Description and Access Standard; RDA; Functional Requirement for Bibliographic Records; FRBR; Functional Requirement for Authority Data; FRAD; Machine Readable Cataloging Standard; MARC 21

# OPERATION & MAINTENANCE FRAMEWORK (OMF): DRIVING TOWARDS AFFORDABLE MAINTENANCE PRACTICE

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#### **ABSTRACT**

BIAS Model is a strategy in developing a harmonious community that will benefit end-users in many ways. One of them is by improving facilities management strategies for affordable stratified residential building. There are three critical success factors that have been found through this study, namely building characteristics, end-user behavior and operation and maintenance (O&M) management. The aim of BIAS Model is to implement best practice of O&M services of facilities and management by giving the best services to the user and at the same time will prolong the life cycle of the buildings. There are three steps to improve the service performance of O&M management via BIAS Model. Firstly, the condition of the facilities and services of the buildings will be analyzed and then the performance will be measured by conducting customer satisfaction survey in BIAS Model. Finally, the evaluation will also be conducted through BIAS system to rate the degree of performance of O&M services and facilities. On top of that, BIAS Model also will provide a series of maintenance care to the end-user on how to upkeep their buildings. To ensure the effectiveness of BIAS Model, all parties must be willing to involve in this project.

*Keywords*: O&M services, facilities, BIAS Model, maintenance care, strategies, stratified residential building

## WORD IN FINANCIAL STATEMENT EDUCATION GAME

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Introduction to financial accounting and reporting is one of the subjects that non accounting students must complete during their diploma or degree. Among all of the topics teach, students must know how to prepare a complete financial statement (FS). However, students often unable to identify the items and confused where the items should be in the FS. It is believed that, a proper teaching and exercise will help the students to excel this topic. With the introduction of the game, we hope the students will be able to grasp the gist of how to prepare the FR. The game promotes a better learning medium to grab students' attention and help students to justify their understanding of the topic.

**Keywords**: Financial statement, education, games

#### HAIYA ALAL SOLAH 2.0

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#### **ABSTRACT**

Prayer is the pillar of Islam. It is therefore vital for all Muslims to fathom the science of prayer copiously. Instilling the knowledge of prayer from the very beginning of being a Muslim, be it among children or newly converts of Islam is advisable as the benefits of doing so are immense. One of the methods to accomplish this is through games. This "Haiya Alal Solah" game is intended to expose and enhance Muslims' knowledge of prayer in an informal way. Repetition and reinforcement are the key techniques in this game. This card game is derived from a previous study which found 80 percent of student respondents admitted to the notion that they neglect to perform the five times obligatory daily prayers (Salat Fard) as per the required philosophies (Nadiyah et al 2012). The serious neglect of the Salat Fard is disconcerting as it has direct and indirect impacts on students' attitudes and personalities (sahsiyyah). Among the factors for not performing the solah Fardu are attitude, knowledge and environmental. The card game is designed to help address the second factor, the knowledge. This board game is interactive in nature and can be played individually as well as in a group. It is the hope of the inventors that this game can play an active role in exposing, enhancing and attracting children and adults alike to the notions of solah.

Keywords: Haiya Alal Solah, Salat Fard, module, enhance

# PEER-REVIEWED ACTIVE LEARNING ENGAGEMENT WITH A MULTI-LEVEL REMEDIAL CLASS

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#### **ABSTRACT**

Past research has shown that one of the reasons that caused the high failure rate in Mathematics is students face difficulties to carry the fundamental knowledge from the previous mathematics course. So, an appropriate and well-designed content of remedial class are necessary for improvement. Therefore, the objectives of this study are to conduct multi-level remedial class that supports peerreviewed active learning engagement and to find the effectiveness of the multi-level remedial class in reducing failure rates in Mathematics among applied science students. The research begins with the development of a set of modules on peer-reviewed of active learning engagement in two levels. The first level will be conducted in the first remedial class held in the very beginning of the semester attended by the first semester student of Diploma in Science, UiTM Tapah who take Pre-Calculus (MAT133). At the end of the semester, the respondents' result will be collected and analyzed. The second level of remedial class involves half of the students who take Calculus 1 (MAT183). These students will be exposed with different level of peer-reviewed active learning engagement. In this research, the control group is students who attend only one remedial class while the experimental group comes from the students with two-level remedial class. At the end of the semester, the result of these two groups of respondents will be compared and analyzed. Hence, it is anticipated that the result will help in reducing failure rates in Mathematics courses especially for Applied Science students.

**Keywords:** Active learning, peer-reviewed, remedial class, mathematics

# **QUICK METHOD: LIMITS AT INFINITY (QUMLAI)**

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#### **ABSTRACT**

Algebraic computation of limits of functions as X approaches infinity (plus or minus infinity) are somewhat challenging. Normally, students need to use many different rules that required good memorization. Previous results showed that the students took much time to solve the limits at infinity problem and initially, most students incorrectly concluded the limit does not exist. Therefore, Quick Method of Limits Approaches Infinity (QuMLAI) is developed to enhance the learning process among students in higher learning institution. By effectively implementing the QuMLAI that contains the simplest way to solve the limits problem, students can master the method in five minutes demonstration. The method was proven statistically successful based on the experiment conducted among 44 science students whereby the result reveals that the students' time taken to solve given problem improved after the use of QuMLAI (p = .000) and the accuracy is 100%. On the average students spent 140 seconds (incorrect answer = 8 students) to solve the problem using ordinary method compared only 34 seconds (no incorrect answer) using QuMLAI. It is hoped that QuMLAI can be used as an alternative approach for teaching and learning process that can lead to excellence in Mathematics subject especially in limits topic.

Keywords: QuMLAI, limits, computation, infinity

## **EXPDGEO: 360 GRID GAME**

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#### **ABSTRACT**

ExpDGeo exposes the students to the concept of geography, the physical landscapes and the population landscapes, dynamics and activities. The team develops a challenging game based on educating the student to examine the diversities of the regions deal with the dynamic nature of the global business environment and current events. This game coverage will enhance the students' understanding that regions are different in term of their culture and history, environment, economic growth, political institutions and its local and international policies. Important issues regarding changes in political, cultural, legal, environmental, economic, and governmental forces that interact with international business management will be emphasized.

**Keywords**: World map, Marketplaces, Population pressures

# BLENDED LEARNING VIA MOOC: ORDINARY DIFFERENTIAL EQUATIONS

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#### **ABSTRACT**

Differential equations are widely used in a variety of fields. For instance, problems involving thermodynamic changes, population growth and spread of disease are modelled by differential equations. Ordinary Differential Equations has been offered as a course to CS143 students since 2013. In 2014, this course evolved into a "blended-learning" course. Besides that, we noticed that periodically, certain batches of students performed poorly in this course. In order to help poorly-performing students, we decided to create an online course so that students can access course materials all the time. The Massive Open Online Course (MOOC) was thus developed and blended-learning could then be used within the MOOC platform. Lecturers can now assign students' online materials ahead of class. Students can also use the online materials as a tool for revision and reinforcement. MOOC also makes lifelong learning available for all. Students anywhere in the country or even in the world can sign up for the open-learning course. The online method means students can study at their own pace. The online module is currently being tested. The developers of this online module hope that students will benefit from it.

Keywords: Ordinary Differential Equations, blended learning, MOOC

# SOCIAL MEDIA AS AN INTERACTIVE LEARNING MEDIUM FOR THE MILLENNIALS

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#### **ABSTRACT**

This paper is based on an action research regarding a learning approach of using social media as a platform to submit a course assignment in higher education. The idea of utilizing such approach was stimulated by today's young peoples' fascination in using social media in relation to everything they are doing on a daily basis. The same goes to today's university students who range from the millennial to post-millennial generations. The objective of the study is to examine students' views on the lecturer's approach of incorporating social media in the teaching and learning process. Method conducted in this study is a short questionnaire regarding the students' views of using such approach in their learning activities. Findings show that most of the participated students, whose generation belongs to the millennial group, like the idea of incorporating social media in their learning experience. The result of this study is parallel to one of the millennials' significant characteristics which is 'technologically savvy'.

Keywords: Social media, interactive learning, millennials, action research

# P.RAMLEE: WHERE HE BEGINS...

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#### **ABSTRACT**

Academy of Language Studies had introduced Mandarin language course with the aim to train the students in UiTM who took the subject could speak Mandarin in basic. Prior to year 2017, thirty per cent of the continuous assessment for Mandarin language course was assessed based on communication skill. This had contributed the highest mark comparing with other type of tests such as listening, reading and written tests. In addition, since September 2017, the percentage for communication skill was increased to fifty per cent by testing students on group role-play and simulation dialogue presentation. Nevertheless, past studies showed that majority of the students find difficult to excel in the communication skill due to the learning environment, pronunciation problem and lack of interest in learning Mandarin Language. Consequently, they are lack of confidence to speak in Mandarin in public. Therefore, in line with the 21<sup>st</sup> century education system, active learning was introduced to improve their communication skill. The active learning was designed by introducing *P.Ramlee* films in teaching and learning among students in UiTM Kedah branch for Mandarin Language I and II. For the first trial, students were asked to participate in 2014 Mandarin Short Film Awards: Tribute P.Ramlee which requires them to adapt any *P.Ramlee* films into their thirty minutes short film. During active learning process, lecturer acts as a facilitator. The trial was successful and then the second active learning activity which is *P.Ramlee* Mandarin Musical Sketch. The application of *P.Ramlee*'s films in teaching and learning Mandarin Language for both levels does not only improve communication skill but also enhance the confidence of students to speak Mandarin in their communication with others, especially when they had been invited to perform *P.Ramlee* Mandarin Musical Sketch during Kedah States' event.

Keywords: P.Ramlee, Mandarin, communication skill, active learning

# **ONEFORYOU (14U)**

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#### **ABSTRACT**

With the urge towards technology advancement, the need to move towards the aim in fully utilize ICT in reflecting to its objectives. With OneForYou, 14U, the project will help the students to access to various services which it shows that the concept of one-centre student card is convenient for the students in term of time and cost. To align with the technology advancement and rapid economic growth, 14U will ease the burden of the student that find the current student card is inconvenient. In addition, 14U will be convenient to the students that live in a busy schedule in academic aspects. The uniqueness of this card is it will have a feature that combine all functions that relate to students' activities. With this card, the students just need to bring one card for all purposes.

Keywords: Technology advancement, one-centre student card

## DESIGN OF JIG FOR MILLING MACHINE

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#### **ABSTRACT**

The development of the jig in milling machine is one of the improvements in the machining process. The function of the jig is to hold, support and clamp the cylindrical workpiece. Currently, the milling machine in the machine shop is not applicable to produce the slotting in the cylindrical workpiece. Therefore, the design and fabrication of milling jig are required in order to hold and clamp the cylindrical workpiece during in the machining process. There are three design needs to evaluated using Pugh Method. The ideas come from a survey and benchmark. Finally, the jig is selected based on the highest net score in screening method. The jig is drawn and analyzed with SolidWorks software. Aluminium is selected as selection material for the jig. The fabrication of jig has been done with conventional milling machine and the time completion is 96 hours. The accuracy of this jig is  $\pm 0.01$ mm and verified by experiment.

**Keywords**: jig, milling, cylindrical, slotting

# FLOWLOGIC 6 STEM EXPLORATION VISUAL PROGRAMMING TOOL

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#### **ABSTRACT**

In an effort to create an educational tool that would provide students and Educators with a Strong Foundation of innovative STEM (Science, Technology, Engineering, Mathematics) Exploration and programming know-how, FlowLogic 6 was created. FlowLogic 6 is a Pick and Place Flowchart based Interactive Testing, Debugging, Programming, Controlling and Data Visualization software tool. User able to learn and carry out various programming challenges embedding math functions either by using built in virtual mimic; on screen project models or physical model connected to a plug-n-play microcontroller board like Arduino Uno via the PC's USB communication ports. It is an integral part of STEM hands-on physical and minds-on engagement activity for students' and educators' learning and teaching in the area of Technology and Engineering embeds Science and Mathematics incorporating Electronics, Sensing, Motion and Internet building prototype projects from LED to IOT and ROBOTICS. Students and Educators will be able to indulge in a joyful process of brainstorming, experimenting, tinkering, investigating, and inventing while carrying various programming challenges using FlowLogic 6 to control, monitor and analyze their projects. The "Kick-Start" STEM Learning & Teaching package and Activity modules that come along with FlowLogic 6 further ignite students' interest in the subjects related to STEM (Science, Technology, Engineering and Mathematics), as well as enhances Computational thinking, Problem Solving skills and Digital competency while at the same time building a solid foundation in critical 21st-century skills and Industrial Revolution 4.0.

**Keyword:** FlowLogic 6, Arduino, myStem, Flowchart, Visual programming, Kick-Start, Thinking, Problem Solving, Digital Competency, Industrial Revolution 4.0

# MFRS140: QUICKCHART APP

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#### **ABSTRACT**

Accounting standards have continued to evolve to strike the balance between providing meaningful information to the users and balancing up cost of preparing such information. However, there is growing concern that financial reporting has become overly complex. The complexity caused by financial reporting standards may derive from many factors, such as their length, the difficulty in understanding them, and the cost of applying their requirements. In the educational stream, students find that it is hard to understand the lengthy wordings in the standards. Therefore, this interactive application is designed to help users, especially students with classification issues under the MFRS140 Investment Property. This application provides useful and precise guidelines for students as to avoid lengthy wordings to increase the level of their understanding. By using the application users will have a better knowledge in identifying whether the land and buildings fall under MFRS140 or other MFRSs. Furthermore, the application contributes to the effort of making users learn standards of accounting in a different perspective rather than a classroom-oriented perspective.

*Keywords*: Interactive app, MFRS140, Investment Property, complexity, accounting standards.

## **GO-COUNTSTOCK**

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#### **ABSTRACT**

A game encourages students to explore while learning. More importantly, it is a creative classroom activity which is both competitive and collaborative. G0-COUNTSTOCK is an accounting board game that enables students to gain practical accounting skills and learning basic bookkeeping skills in recording inventory of the business using Periodic Inventory System and Perpetual Inventory System. Knowing the theory and syllabus covered in classes does not mean students have a strong understanding of accounting as a fundamental foundation in a business and finance. Thus, GO-COUNTSTOCK will encourage hands-on and active learning among students. It is a simulation board game which allows students to have an experience of running a business especially on handling and recording inventory. This game takes an idea of monopoly games and it can be played with four students. Each student will be assigned their own inventory to handle and records in the form of purchases, sales, purchases returns, sales returns, freight costs, purchases discounts, and sales discounts. For each transaction, students must record the double entry using Periodic and Perpetual Inventory System and link it to the physical existence of inventory. This game is beneficial to students because it sparks new learning style and engage students in class by incorporating simulation and entertainment elements. It will facilitate students to differentiate Periodic and Perpetual Method of Inventory. This board game can be used as a teaching tool in financial accounting courses, especially for introductory courses and for nonaccounting students. Using the Monopoly Board Games in the first course in financial accounting tends to generate a higher level of competitive energy in the classroom experience, with more actively engaged students grasping the nature and purpose of the financial accounting system more quickly and actively with other pedagogical approaches previously used.

**Keywords**: Inventory, education, games, periodic inventory, perpetual inventory

### TAX WHEEL V.2: ALERT YOUR COMPANY

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#### **ABSTRACT**

Taxation is a core paper for accounting students in the most higher education institutions in Malaysia. In Taxation course, there are a lot of important deadlines and variety types of documents for tax assessment. Based on the self assessment system which has been introduced in 2001 for companies in Malaysia, taxpayers are responsible to perform tasks on income assessment as well as getting the tax return to tax authorities on time. Therefore, the company ought to keep in mind the deadlines for each tax form, for example; CP204, CP204A, Form C and GST forms. The actual taxpayers as well as the students of taxation always puzzle about the types of tax returns and the deadlines for each form. In order to cope with this problem, we innovated a product with a minimum cost that will help students to understand and remember the important deadlines for each type of tax forms. This product is useful not only in taxation class, but also to the tax agents and management of companies.

Keywords: corporate tax, Goods and services tax (GST), tax education, taxation

# GLOSSARY OF TERMINOLOGY FOR CORPORATE AND SYARIAH GOVERNANCE

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#### **ABSTRACT**

Malaysian company is unique and distinct due to the concentrated ownership structure and the influence of cultural values over its governance. Besides, being run in an Islamic country, the Malaysian companies have the full responsibility to incorporate in their governance system elements pursuant to Syariah requirements and compliances. In short, one can now understand corporate governance (CG) in Malaysia is beyond conventional, that has also comprehensively included the Syariah mechanism. Therefore, it is important to understand the concept and terminologies involved in the context of corporate and Syariah governance. The existing terminologies for corporate governance were rather generic, not specific on the Malaysian scenario and with Syariah outlook. Consequently, students and practitioners may have difficulty to understand the concepts or key terms in corporate and Syariah governance in Malaysian context. The objective of this glossary is to provide quick access to key terms of corporate and Syariah governance. As such, this handy pocket size glossary aims to provide a comprehensive collection of terminologies that are associated with corporate governance and Syariah compliance companies. The use of these terminologies enables the users such as students in the area of corporate administration, Syariah governance and corporate practitioners to enhance their understanding on the key concepts. This glossary is designed with a handy size that makes it easy to carry around.

**Keyword:** Terminology, concept, corporate governance, Syariah governance

# EDI APP (EQUITY/DEBT INSTRUMENTS APPLICATION)

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#### **ABSTRACT**

Accounting undergraduates may find studying accounting boring and challenging, as there are many complex aspects of the Malaysian Financial Reporting Standards (MFRS) that need to be understood. Additionally, they also may have different study capabilities. As a result, some of them may have difficulties in understanding the accounting concepts and finally, fail to record the correct accounting treatments. Therefore, a type of software named Equity/Debt Instruments Application (EDI App) is designed with different levels of challenges and subject to a reward system. The purpose is to facilitate them to improve their understanding on two specific topics of a Financial Accounting paper by means of IT. Students need to attempt to complete certain tasks as per GBL, which actually are exercises of the topics. Responses to the students' answers will be provided immediately whether they are correct or not. Journal entries and financial statements will be generated accordingly after the third attempt. This application can be used as a self-learning aid that suits the undergraduates' adult-learning process by promoting independent learning. It is expected the undergraduates' understanding of this particular topic will be improved due to their ability to study at their own pace in a more fun and engaging way.

**Keywords:** Game-based learning, IT, application, accounting education.

## ACCOUNTING RAT RACE

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#### **ABSTRACT**

The Government of Malaysia needs 60,000 accountants to serve the public and private firms in achieving developed country status in year 2020 onwards. UiTM, hence, has been given the responsibility to produce the professional accountants. UiTM also is proven as the largest contributor of Bumiputera chartered qualified accountant as one third of successful applicants for the Malaysian Institute of Accountants' membership in the year 2013/2014 were UiTM's graduates. Therefore, it is crucial for the UiTM's academicians to make sure all accounting students were taught proper accounting knowledge to prepare themselves to become chartered qualified and professional accountants. However, Diploma program does not provide the opportunity for the student to have a hands-on experience in accounting works. Therefore, the accounting rat race game is introduced to incorporate the knowledge they learn in the classroom with the real business environment. They will be exposed to the real business transactions to the level of the decision making process based on the opportunity and challenges set during the game. The goal of the game is to enhance the students' understanding of the accounting knowledge or theory learnt from the classroom. Therefore, it is hoped that the game can prepare them as chartered qualified and professional accountants, and eventually become a key player in the industry.

**Keyword:** accounting game, edutainment, accounting race, accounting

#### A FRAUD SENSOR APPS

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#### **ABSTRACT**

After the Enron scandal and the collapse of Arthur Andersen in 2001 and with the introduction of tough measures in the Sarbanes-Oxley (SOX) Act of 2001, firms have shifted their ways in manipulating financial statements from accrual earnings management (AEM) to real earnings management (REM). The main reason is to manipulate the accounting figures without the knowledge of the auditors as REM is the most difficult earnings management activity that an auditor can detect. Even earnings management activities are well accepted in accounting world; however, it can leads to fraud activities. A fraud sensor apps is an early detection tool based on real earnings management model adopted from Roychowdhury (2006) to determine potential fraudulent companies. It enables the regulators such as Securities Commission of Malaysia (SC), Bank Negara Malaysia (BNM) and Bursa Malaysia (BM) to determine whether those public listed companies in Bursa Malaysia might be engaged in earnings manipulation activities. Since Malaysia has been listed as among the world best investor protection regime by World Bank's Doing Business in 2017, it presents an opportunity to highlight the issue of real earnings manipulation activities in this country. It may assist those interested parties to further scrutiny these companies, whether they really engaged in earnings management activities that have a high likelihood of becoming part of fraud antecedent.

**Keywords:** Earnings management, fraud, detection tool,

# eReMAP: Boost Your Mind Power and Writing Skills!

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#### **ABSTRACT**

In Malaysia scenario, the graduates produced by this education system have been criticized as unfit for employment as they have not had a holistic education that produces market-ready and competitive individuals. Some of the problems most probably occurred due to the lack of critical thinking skills and poor communication skills, along with a lack of proficiency in the English language. One of the goals of Malaysia Education is to provide students, especially higher educational institutions (HEIs) students with the ability to construct arguments which are reasoning and thinking critically in writing skills. Thus, this new technique was designed to develop the power of argumentative reasoning for helping students specifically in HEIs to improve their critical thinking and writing skills, specifically in argumentative writing skills by using this technique and it is also specially designed with emojis, multimedia and graphic elements. This inventive product is expected to produce the full potential of talented students and educators, and empowering governance among universities lifelong learning and global learning for 21st century teaching and learning.

Keyword: critical thinking, writing skills, argumentative, technique

#### **BACKCHANNEL SHOW**

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#### **ABSTRACT**

Technological advancement continues to push educational proficiencies to the next level. New mechanism of teaching and learning must be engaging enough to equip students with valuable lifelong learning in order to foster continuous development and improvement of the knowledge and skills needed. The aim of this comparison study is to get students' feedback on their presentation techniques and experiences as they had to do in-class presentation and used an online method. With the evolution of social media like YouTube, it creates a platform for students to show their talent and capabilities and also to keep up with their trend and lifestyle. Due to the time constraints; either to cover the syllabus in class or time consuming due to higher number of students in a class, an online presentation is one of the preference method to assess the students' group presentation. But to what extend it is effective for the students, this study focus on comparing which presentation method they can perform better and why it is so. The process for students to prepare of both in-class presentation and the online presentation are different and the learning outcome will yield better impact to the students, regardless which presentation techniques they prefer.

Keywords: presentation effectiveness, in-class presentation, online presentation

# iSCENARIOS: ROLE-PLAY FOR BUILDING INTERCULTURAL SKILLS

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#### **ABSTRACT**

With the advancement of technologies, language learning too has taken a new perspective in terms of learning strategies, methodology and techniques. One of the most prominent skills in language learning is speaking, which can be practiced through discussion, presentation and role-playing. Besides, language learners also optimize the use of internet by watching online videos to practice speaking. Meanwhile, as the modern workplace becomes more global, companies are putting a bigger emphasis on an employee's intercultural skills. In a multiracial country like Malaysia, lack of communication between the races could lead to misunderstanding and miscommunication. Having the knowledge on the different English used by different races is essential in order to improve communication between speakers from different races. This product which contains role-play videos of speakers from each race is innovated as a user-friendly and flexible tool to assist language learners in identifying and understanding the difference of English as used by the three major races in Malaysia; Malay, Chinese and Indian. Useful notes are also provided according to race so they can identify their common errors in speaking and correct them in the future. This product is expected to have good commercial value for students, educators, private and government sector workers, and foreign workers.

**Keyword:** role-play, speaking, intercultural skills, language learners

# ISLAMIC: MEMORIZING QURAN WITH ADVENTURE GAME

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#### **ABSTRACT**

Islam is one of the greatest religions in the world with the Quran as its guidebook. The advances in technology tend to make the Muslim put aside their book guidance, especially on Gen Z (those who were born in the 2000 era to the present day). Profound technological mastery is one of the differences of Gen Z from the previous generation. In order to keep the Gen Z Muslim from neglecting their guidebook due to the existence of technology, a fun technique for memorizing Quran is needed. This game is designed to educate players that memorizing Quran is not as difficult as imagined. It is designed as an adventure game with various stages inside. Each stage contains with different journeys to collect pieces of verses to be assembled at the end of the stage. Before starting the stage, the players are given a voice command to remember the verse to be compiled. By playing the game, the players will be easier to remember verse by verse of Quran. The game will support people, especially Gen Z to memorize the Quran in their daily lives without any boredom. So, the creation of *hafidz* and *hafidzah* from Gen Z is not something impossible.

Keyword: Islamic, gen z, Quran, education, adventure, game

## SAHAM IGO: AN EDUCATION GAME FOR LEARNING STOCKS

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#### **ABSTRACT**

This project aims at designing an educational media for learning stocks through a game named "Saham IGO." In Indonesia, the public understanding on stocks still need to be improved. This is due to lack of education on stocks in the age of children. Although people already know about stocks, they still afraid in managing or investing the stocks. Therefore, it needs a new innovative tool to understand and know better how to invest in stocks. "Saham IGO" is a game for every person which is used to simplify the understanding on how to invest in stocks in the form of simulation. "Saham IGO" provides both theoretical and practical access to stocks education. In its application, "Saham IGO" provides an overview and guidance for running a stock investment. "Saham IGO" will bring the courage of people to take advantage of opportunities that are related to the sale and purchase of shares. In general, "Saham IGO" can help and provide an easy understanding of stock investments.

Keywords: Stocks, adventure game, investment

### **MY CHEMISTRY**

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#### **ABSTRACT**

'My Chemistry' applies gaming concepts and technics to create fun in learning and helps students in understanding chemistry syllabus for SPM easier. This application contains exercises and assessments which test students' understanding in a chemistry base on the latest syllabus in SPM. Despites having fun, students will also learn the experimental processes as if they are doing it in the laboratory. It is still in the early stage of the development process and planned to be built into Android and Windows application in the near future.

**Keywords:** fun in learning, chemistry, school students, gaming concepts.

# PLAN AND MOVE: COST ACCOUNTING & ENTREPRENEURSHIP (VERSION 2.0)

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#### **ABSTRACT**

Plan and Move: Cost Accounting & Entrepreneurship Version 2.0 is an intellectual game enhanced from previous version offer players an exciting experience of trading. The sense of managing cost and creating sales encourage players to challenge their creative thinking in planning, organizing, controlling and decision making similar to the real business in day to day operations. It also involves collecting, recording and reporting financial information that will help them to prepare themselves prior to become an Entrepreneur. At the end of the game, players will realize how cost planning and organizing methods will help them in maximizing profit by reducing costs and then set up their selling price to achieve certain targeted profit. Plan and Move: Cost Accounting & Entrepreneurship Version 2.0 should make it easier to gain basic understanding of trading concepts. Armed with this understanding, players can then return to accounting and cost accounting syllabus to tackle complicated issues and problems.

Keywords: cost accounting, accounting, entrepreneurship, decision making

# INTERNAL CONTROL INDEX

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#### **ABSTRACT**

The internal control index is designed to display the level of compliance of internal control practices as compared to the industry average. Internal control reporting requirements is important because of the belief that internal controls ensure the credibility of financial reporting and restore investor's confidence in financial reporting. The MCCG 2012 on Principle 6 recommended that the board of directors should a have a sound internal control system and Principle 1 recommended that reviewing the adequacy and the integrity of the management information and internal control system of the company. So this internal control index serves as visual reporting to facilitate the management especially for the board of directors to accountable for designing, implementing, evaluating and eventually certifying their companies internal control systems and procedures. Thus, the internal control index and reports on internal control may results in improvements and provides financial statement users with an early warning about potential future problems that could result from weak controls and good internal control is considered an important factor in achieving good quality financial reporting.

Keyword: internal control

# SOPL-IT! - AN ACCOUNTING BOARD GAME

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### **ABSTRACT**

Most of the information that we learned in high school were in the form of lecture, black and white and more rote. According to Murliss and Orloff (2008), those we learnt in high school went directly to short term memory so that we could pass the tests and move on to the next grade. While years ago when we learn things from early childhood, much of the information went directly to long term memory because the medium of learning includes music, colour, smells, emotional experience, movement and lots of fun! Allen, McCourt and Low (2011) found that playing the double entry monopoly game is the best way of active learning in accounting principles and practices. They explain that Monopoly is the famous board game and an estimates half a billion people are believed to have played the game. SOPL-it! is a board game that we invent from Monopoly. We use the board idea to make a new interesting accounting game. The various backgrounds of students in introductory principles of accounting classes make it necessary to teach the subject in a fun way so it can motivate students to learn it. In higher learning institutions, educators often face a battle imparting an understanding of the basic accounting and to ensure that effective learning is taking place.

Keywords: Accounting, education, games, basic statement of profit or loss.

# IMMERSIVE EXPERIENTIAL LEARNING CURRICULUM FOR BUILDING PATHOLOGY STUDENTS

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#### **ABSTRACT**

The building pathology course for building surveying students is part of a larger curriculum for undergraduate degree in Building Surveying. An immersive and experiential learning approach is designed to get the students to learn the necessary technical knowledge and skills in investigating building defects, based on proper scientific methods. The course is run over 2 semesters, where Semester 1 is focussed on the technical knowledge and Semester 2 carries on from this and prepares the students on standard application for Building Condition Assessment (BCA) surveying standard by the Ministry of Works. Various instructional design methods are used to enhance learning experience. In Semester 1, students were asked to create a game, submit a video documentary. In semester 2, focus was given on standard reporting techniques. The course incorporated BCA Level 1 exercise as real case project in collaboration with Bahagian Senggara Aset Wilayah, Jabatan Kerja Raya. Various profiles of residential buildings within Kuarters JKR Batu 4 1/2 Jln Sg.Besi were chosen. Findings from inspections were presented and verified by in-house building surveyors. Students also have benefited from other reporting documentations including remedial specification, bills of quantities, and maintenance cost estimates which was prepared in accordance to JKR standard practice.

*Keywords:* immersive learning, building surveying, building pathology, Building Condition Assessment, JKR

# PRO CARD: A CARD GAME FOR STUDENTS.

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### **ABSTRACT**

Good grades are important for students as they reflect the level of understanding in any subject. However, many students may have difficulty to answer theory questions during examinations because they do not understand what they have learned and unable to memorize facts. Being generation Z, traditional way of study that is academic readings may be boring to them. Consequently, they will avoid reading, which is a self-destructive step; without reading they will not grasp the fundamental understanding. Thus, this game is designed to help students to understand the important facts via a fun method. It is hoped that the students can remember what they have learnt and able to apply the knowledge not only in the examinations but in the future semesters. By playing in a group, this game could help students learn faster than studying alone as other group members can give more input and suggest the use of mnemonic to enhance understanding among them. The 'PRO CARD' also assists lecturer, especially in tutorial class by offering a new way of learning method of focusing on past year questions into attractive and exciting game. Through this game, the lecturer can identify which area that the students need further justification and emphasize more on that matter to ensure students able to answer well in the examinations.

Keywords: Theory questions, memorize, game

# LEDGER-NDARY: AN ACCOUNTING GAME

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#### **ABSTRACT**

In fact, double entry is the fundamental concept underlying present day bookkeeping and accounting. It is based on the fact that every financial transaction has equal and opposite effects in at least two different accounts. For accounting students, it is compulsory for them to master the basic of double entry. However, some of them might struggle in mastering it during class, even when they do a revision on their own. From the issue arises, thus we come into idea to innovate a simple game related to double entry that could help the students in a different and more interactive way. In this game, the players need to identify the debit and credit for each transaction and at the end maintaining the balance between the credit and debit sides. The game offers two benefits for students, which is basic accounting education and at the same time with a little bit more of fun. The focus is not only for accounting students since it will also help non-accounting students who takings basic accounting course or for anyone who like to gain an extra accounting knowledge. We modified and designed this game for the diverse backgrounds of people with the thought that every person will gain benefits aside from fun that will help them manage their finances in a more proper way.

**Keyword:** Accounting, education, games, double-entry.

# BAWAH MEJA: THE CORRUPTION EDUCATION GAME

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### **ABSTRACT**

The Government Transformation Programme (GTP) is an effort by Malaysia's current Government to address seven key areas concerning the people of the country. One of the National Key Results Areas (NKRA) to be addressed is fighting corruption. This is because corruption activities are a significant cost to the country. These activities increase the prices of everything and contribute to the decreasing moral values among Malaysians. It is believed that, to fight corruption, proper education on the matters relating to the activities must be provided. A person may not know that the thing he is doing is a crime of corruption. This game was designed to educate players on corruption activities and the consequences in engaging with such activities. The game creates a stage for players to see and experience corruption by allowing them to witness the crimes and learn from those mistakes. By playing the game, players will have a better knowledge on corruption activities and can easily identify those activities when they occur. Furthermore, the game contributes to the effort of anti-corruption activities and serves as a useful tool for anti-corruption bodies specifically SPRM to educate Malaysians, encouraging the people to always say "NO" to corruption and urges them to maintain a high integrity level.

Keywords: Corruption, education, games, anti-corruption

# **NEGO ADVENTURE**

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### **ABSTRACT**

"NEGO Adventure" is a game that was developed to teach players on the basic business transactions and dealing with risk. The game offers an exciting way for anyone to get information about the reality of the business world. By playing "NEGO Adventure", players need to think carefully to make important decisions for their business. This will help players to increase their entrepreneurial skills and help them to understand the importance of being critical in their business dealings. This game incorporates numerous business theories, elements and functions and shows that sometimes in business, to gain more, you must incur more. Some of the elements included are sales, purchases, labours, assets, liabilities, networking and many more. In this game they will learn how to make decisions, grab opportunities handle risk and to always bear in mind that in business, even the smallest decision matters.

Keywords: Entrepreneurship, education, games

# **SQUEEZE: FINANCIAL PLANNING GAME**

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#### **ABSTRACT**

A sound financial control will help a person to live a more relaxed and comfortable life. In order to manage financial matters properly, that person must have the basic knowledge and ability to foresee future expected cash outflows and must make preparations for any unexpected events. Currently, more and more graduates are trapped in financial problems due to excessive spending and borrowings. Furthermore, it was found that personal financial education seems to be overlooked and not many syllabi include or pay enough attention on the subject. Most students nowadays know the importance of cash management, however, they lack the experience of actually having the cash and planning their spending and saving for future use. Therefore, SQUEEZE educates players on the importance of having a sound financial control and provides the experience needed for players to have better knowledge of personal financial management. The game requires players to make choices which require them differentiate between needs and wants. The game reflects real life activities and also provide challenges for players to solve. Furthermore, players must accept the consequences once a decision had been made and they have to adapt and continue to survive. By playing the game, players gain the experience of managing resources and understand how to plan their spending wisely.

**Keywords:** personal finance, board games, educational games

# **EZ MFRS APPS**

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#### **ABSTRACT**

EZ MFRS Apps is the software stack for mobile devices that make accounting students learn the Malaysian Financial Reporting Standards (MFRS) easier and more attractive. This software includes The Conceptual Framework that deals with the objective of financial reporting, the qualitative characteristics of useful financial information, the definition, recognition and measurement of the elements from which financial statements are constructed and concepts of capital maintenance. It allows students to learn the accounting standards not only from books, but from mobile devices at anytime and anywhere and accessible by everyone. The apps will helps students to learn the standards more interactive by learning through the notes, attempting questions and looking at the Annual Reports of selected companies in Malaysia. This will enhance their understanding by not only learning the standards theoretically in the classroom, but also practically through this apps.

# ISLAMIC FINANCE AND BANKING: 4 PITSTOPS 6 MOTIONS

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#### **ABSTRACT**

Malaysia has a unique environment. The different generation and races of Malaysians are exposed to a new set of values and values (Abdullah & Pedersen, 2003). Hofstede (1984) uses four dimensions to classify national culture values. Hofstede suggested that people are different in culture according to their region, religion, gender, generation and class. Thus, he concluded four dimensions of cultural differences; Masculinity, Individualism, Uncertainty Avoidance and Power Distance. The third dimension is masculinity versus femininity which refers to what extend masculine values (such as achievement orientation or competition) are dominant to feminine values (such as discretion and modesty). By looking at the ethnicities in Malaysia, it is our objective to investigate to what extent the Malay ethnic and cultural values have effect on the learning and teaching. We develop the teaching method called "4 Pitstops 6 Motions" to encourage students to be able to grasp the understanding of Islamic Finance subject. This method consists a few stages of preparation before they present the subject matter in four small groups in the classroom. Students should be able to explain the context within 15 minutes. By going through all processes, students will have a better knowledge and they are able to explain the Islamic Finance and Banking concepts in the simplest way within the short period of time. This method encourages students to be more confidence and able to communicate well.

Keywords: Culture, education, Malay,

# **INTERACTIVE BAGS**

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#### **ABSTRACT**

Interactive BAGs is a new innovative teaching aid that helps students who are taking accounting courses and those who take Introduction to accounting (non-accounting students) courses. Interactive BAGs will improve their understanding of the basic concepts in accounting. The purpose of this teaching designed aid is to be a source of reference and activities for students based on the syllabus, work scheme and test specifications for the course. It is also intended as a guide for teaching component accounting approach, Outcome-Based Education (OBE). Apart from the reference text is that students need the teaching aids which are more interactive and interesting. With the initiative of the lecturer, the accounting game was created to assist the learning process. Even though currently education has gone online, we believed that physical interactive in class learning is still relevant. Therefore, our goal is to make learning more exciting and attractive to attract the attention and interest of students. The impact of these game students will have a solid understanding of the basic concepts of accounting. Teaching aids has been tested in the classroom and received a positive response from students.

Keywords: teaching aids, interactive games, accounting

# **GREEN AND SUSTAINABILITY**

### PLANAR INVERTED-F ANTENNA AS ON BODY ANTENNA DESIGN

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#### **ABSTRACT**

The body centric wireless communication has become an important for fourth generation mobile communication system and development of wearable antenna. This project is focused on the development Planar Inverted-F Antenna for on body antenna communication with the frequency of 2.45 GHz. The antenna used FR-4 as a substrate and the thickness is 1.57 mm. It has a few advantages for the modern antenna which is light weight, low cost, almost maintenance free. The FR4 substrate is easy to fabricate and strong. The full ground at the back of the antenna can reduce the sensitivity towards the body skin. Therefore, antenna selection is vital process due to degradation of antenna performance which effected form body electromagnetic wave. The antenna is covered by grounding FR4 substrate and this can reduce the radiation towards the human body and less harm when the antenna is placed on the human body. The antenna size is 63 x 34 mm of overall ground plane size with the height of 6.95 mm. The simulated return loss of 10.61 dB is obtained for this planar inverted-F antenna at 2.45 GHz while the measured performance of the fabricated antenna is 19.123 dB at the resonance frequency of 2.47 GHz. The radiation pattern of the antenna at 2.45 GHz shows that the antenna having an omnidirectional pattern.

*Keywords:* Planar Inverted-F Antenna (PIFA), wearable antenna, FR-4 substrate, body centric wireless communication, On-body communication.

# PUBLIC FACILITIES GUIDELINES CALCULATOR FOR SUSTAINABLE HOUSING DEVELOPMENT

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#### **ABSTRACT**

Planning guidelines are used by local planning authorities (PBT) to ensure effective housing development projects. The local planning authorities have developed a set of planning guidelines to be adhered to by all development projects in Malaysia. The main problem of the existing planning guidelines is that they are prepared in the form of reports which means that they are not user friendly. In order to address this problem, a digital version of planning guidelines called the *Public Facilities Guidelines Calculator for Sustainable Housing Development* was invented. The main objective of this invention is to develop a digital version of planning guidelines which are more user friendly to help the users in accessing the 'exact' information 'easily' and in 'express' manner (3E's). The calculator is hoped to be able to provide assistance to town planners, consultants, land developers and students in preparing the development layout which fulfils the development requirements for planning permission applications. In addition, the calculator is expected to ease the job of the local authorities in determining whether the proposed development layout is aligned with the planning guidelines so that the planning permission can be issued.

Keywords: Public Facilities, Planning Guidelines Calculator, Sustainable Housing Development

### **SOLAR CHARGING HUB**

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#### **ABSTRACT**

Since 2005, advancement in solar technology has gradually increased in Malaysia, mainly focusing on photovoltaics (PV) applications for commercial buildings and housing sectors. However, this technology has a slower development for smaller systems, for example a solar charging hub. A solar charging hub is designed to allow electronic gadgets or devices (for example, mobile phones and smart tablets) to be easily charged outdoor. This system has a huge potential in many buildings in Malaysia, especially academic institutions and universities. It is widely known that students and lecturers has used these devices 24-hours a day and a full-powered device is essential for telecommunication, online notes and assessments. Due to this new era of telecommunication, electricity consumption in campuses increased due to this "power-charging" lifestyle. A solar charging hub can help to harness the power from the sun for the use of charging these electronic devices. The benefit of the system is to reduce fiscal budget on campuses' electricity bills for a long term period.

Keywords: Solar technology, photovoltaics (PV), charging hub

# REAL ESTATE INFORMATION – ON THE GO

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#### **ABSTRACT**

Real Estate Information Smart App (REISA) was created in order to assist users in buying and selling properties. REISA integrates Geographical Information System (GIS) with Mobile App. A potential buyer can install these apps on their mobile phones or tablets which allow them to access all the details on properties they interested with in Seri Iskandar area. The objective of REIA is to provide updated information on the property attributes especially on the location of the property which is the determining factors influencing property values. By integrating Geographical Information System data and mobile apps, the objective can be achieved. The integration between these two systems enable users obtain the information via fingertips. This app features a gallery of pictures and details of the properties such as type of properties, number of rooms, unique feature, range of price, locality and surrounding neighbourhood. It also provide latest information updates as per user requirement. The use of GIS for this app is due to its ability to collect, stored, manipulates, analysed and visualise the geographic data of properties and display it in the form of digital map. The methodology for this project involved planning, data collection on the property details such as transaction price of housing in Seri Iskandar area and digital base map of site area and its location (X, Y coordinates). These data will be inserted into the GIS, processing and analysing procedure took place and finally produced this time saving app. The uniqueness of this project is to provide users with new experience in exploring the properties in digital map using hand phones. Moreover, REIA will benefited user in several ways such as latest information about the preferred properties and they can visualize the accurate location of the properties digitally or in 2 dimension (2D) form by using their smartphones.

**Keywords:** REISM, GIS, Mobile Apps

# ENHANCED CATALYTIC EMBEDDED POROUS SILICON FOR IMPROVED HYDROGEN GAS SENSING

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#### **ABSTRACT**

Requirements for sensitive gas devices increase due to their vast application in everyday life, industry and most importantly for security and safety. The high interest in hydrogen gas sensor is motivated by the hydrogen being the future energy carrier. Investigations to find highly sensitive, selective and small size gas sensors with low energy are actively being pursued. Particularly, in silicon-based gas sensors, it was known that the large active area of etched and textured Silicon(Si) have a good interaction with gas whereby porous silicon(PS)-based gas sensors should have high sensitivity and it can work at room temperature. However, the properties of PS layers often degrade with time which defy the requirement of durability of the gas sensor. Thin film metal oxides are the materials of choice for gas sensors due to their sensitivity to gas and stable physically and chemically in gas media. However, metal oxide need to operate at high temperature to provide low response and recovery time and high sensitivity of the sensors. To improve the interaction between hydrogen and semiconductor materials, Pt or Pd catalytic layers are used. Therefore, based on the properties of PS and metal oxide layers with Pd as contact, we examine the PS and embedded PS for hydrogen sensors which will have the combination potential of sensitivity and stability. In this work, PS, Ge/PS and ZnO/Ge/PS were used to fabricate Pd Schottky contact gas sensors for hydrogen detection. The Porous Silicon(PS) substrate was prepared using the technique of electrochemically etching of n-type Si (100) wafer at a constant current density of 10 mA/cm<sup>2</sup> for 10 mins under the illumination of incandescent white light. After PS formation, Germanium pieces were thermally evaporated onto the two PS substrates in a vacuum condition. This was then followed by the deposition of the ZnO layer onto the Ge/PS substrate by the same method using commercial 99.9% pure ZnO powders. The three samples were identified as PS, Ge/PS and ZnO/Ge/PS samples respectively. Paladium(Pd) finger contacts were deposited on the PS and embedding PS (Ge/PS and ZnO/Ge/PS) to form Pd on PS hydrogen sensors using RF magnetron sputtering. The performance of the PS and embedded PS as hydrogen sensors were examined and discussed. SEM and EDX suggested the presence of substantial Ge and ZnO inside the uniform circular pores for Ge/PS and ZnO/Ge/PS samples respectively. Raman spectra showed that good crystalline Ge and ZnO nanostructures embedded inside the pores were obtained. For hydrogen sensing, Pd on ZnO/Ge/PS Schottky diode exhibited dramatic change of current after exposure to H<sub>2</sub> as compared to PS and Ge/PS devices. It is observed that the sensitivity increased exponentially with hydrogen flow rate for all the sensors. The ZnO/Ge/PS showed more sensitivity towards H2 than that of PS and Ge/PS especially at high flow rate of H<sub>2</sub> with higher current and shorter response and recovery times.

Keywords: Porous Silicon, embedded ZnO, Thermal Evaporation, H<sub>2</sub> sensor

# LANDSCAPE INVENTORY MANAGEMENT SYSTEM VERSION 2 (LIMS V2)

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#### **ABSTRACT**

Landscape Inventory Management System (LIMS) is an innovation system that was built to ease the process of identifying and recognizing the specific inventory data within the scope of landscape maintenance and management actions. Traditionally, the precise location and the condition of all plant materials (this including trees, palms, shrubs and ground covers) within a specific location or area is often hard to identify because it is not systematically coded with a proper designated serial number. Due to this poor condition, high complaints received through the online facility management system has prolong the duration taken by the management team to identify the exact location due to confusion location of the reported sites. Therefore, through LIMS, this core issue has been resolved since the onground data that was collected and updated for every 6 months able to upfront information that efficiently guide managers to effectively manage the landscapes. Through LIMS Version 2, other than providing comprehensive data to landscape owners and managers, this version has been upgraded and improved to ease the process of issuing complaints by the end user through a more interactive ecomplaint method. Therefore, instead of two separate complaint systems, the newly e-complaint method with interactive screen button has been developed through LIMS. With this integration, the innovated user-friendly web-design able to effectively shorten the complaint procedure thus enabling the management team to undertake speed actions to the reported areas.

Keywords: LIMS, Landscape Maintenance & Management, Facility Management System

# TERRESTRIAL LASER SCANNING AND GEOSPATIAL INFORMATION SYSTEM FOR LANDSCAPE MANAGEMENT

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#### **ABSTRACT**

The landscape is part of the support to the beauty of Istana Seri Menanti Museum, Kuala Pilah. Therefore, the landscape should be maintained and managed to ensure the beauty of the landscape will be continued to remain as the Istana Seri Menanti Museum as a national heritage. Landscape information needs to be managed properly by using a new technology for the purpose to ensure the recording, analysis and displaying can be organized easier and systematic. Terrestrial Laser Scanning Techniques and Geographical Information Systems (GIS) was an efficient and effective method of converting information in digital form. Therefore, this study will show the method of landscape data collection by using Terrestrial Laser Scanning and then the database will be created by using Arc GIS 9.3 software. This database will link spatial data with non-spatial data of the landscape. A simple interface will be generated using the existing Visual Basic Application in the Arc GIS 9.3 software

*Keywords:* Landscape, Terrestrial Laser Scanning, Arc GIS 9.3, Database, Interface, Visual Basic Application

# SOLAR TECHNOLOGY: AID FOR FLOOD RELIEF

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#### **ABSTRACT**

Under the National Security Council (NSC) and Ministry of Rural and Regional Development of Malaysia, it is highlighted that the flood disaster management is the most important agenda for both agencies. This is because flood is the frequent disaster that occurs to Malaysia every year. All systems and components related to electricity supply will be affected during this disaster. Therefore, it is significant to have an alternative power supply that can be used as a supporting relief during the incidence. One of the potential alternative energies comes from solar energy. Malaysia is known to have a surplus solar irradiation. Nevertheless, by using solar technology (solar photovoltaic, solar powered generators and photovoltaic emergency kits) flood victims can use basic electrical equipment such as lamps, fans and phone charger. This technology is capable of generating and distributing electricity at relief centre during floods by using solar power. The application of solar technology as one of the green technologies is feasible to be applied during the disaster. This project try to innovate a conceptual idea on how a solar technology can help during flood disaster for rural areas. This will involve a suggestion on a suitable system of solar technology and empirical framework that can be used by the government to help flood victims.

Keywords: Solar technology, flood, aid relief

# INFLUENCE OF INDOOR ENVIRONMENTAL QUALITY ON WORK PRODUCTIVITY IN GREEN OFFICE BUILDINGS

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# **ABSTRACT**

Rising the productivity of occupants' inside the office building has earned lots of attention recently. Numerous studies tried to bring out and amend all the factors which have an influence on productivity. One of the essential parameters is related to the work environment condition. It has been proved that overall indoor environment quality (IEQ) of an office building has an indisputable effect on productivity. In this regard, it can be claimed that one of the green building goals is to provide a better indoor environment condition while reducing the energy consumption and carbon footprint. As a result, this study tried to investigate one of the most important parameters of the indoor environment as thermal adoption inside a green building office. A green building has been selected for this study which is certified by GBI. The investigation was included questionnaire survey and physical measurement of the IEQ. The result showed almost everyone is comfortable with the overall condition of thermal while they claimed their productivity is increased by the building condition. By relating the findings of the questionnaire survey to physical measurement, it is possible to come up with some suggestions for the other thermal adoption of the buildings to increase the occupants' productivity.

**Keyword:** Thermal adoption, Indoor environment quality, productivity, green building

# CARBON ABATEMENT MODULE FOR UNIVERSITY OF MALAYA ECO-CAMPUS: ADDRESSING URBAN HEAT ISLAND AND CLIMATE CHANGE IMPACT

**Suzaini Mohd Zaid**<sup>1</sup>, Nurshuhada Zainon<sup>2</sup>, Nik Elyna Myeda Nik Mat<sup>3</sup>, Hazreena Hussein<sup>4</sup>, Eeswari Perisamy<sup>5</sup>, Masoud Esfandiari<sup>6</sup>

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#### **ABSTRACT**

The relationship between microclimate and Vertical Greenery System (VGS) or Photovoltaic (PV) system has been widely studied in recent years. Though, the PV system and VGS are separately recognized as a tool for sustainable development in urban areas. The aim of this study is to investigate the impact of (VGS) integrated with Photovoltaic (PV) system on urban microclimate and Urban Heat Island (UHI) intensity. A car park prototype was developed in combination with VGS and PV system in an urban area of the University of Malaya, Kuala Lumpur. The prototype is to simultaneously generate clean, renewable energy by converting untapped solar energy into electricity and reduce microclimatic temperature of the campus with carbon sequestration potential of VGS and carbon emission abatement through PV system. An analysis on air temperature, dew point, relative humidity, absolute humidity and carbon dioxide content was conducted before and after VGS installation. The 3 months results after VGS installation showed that VGS could reduce the air temperature at an average of 0.1°C to 2.1°C and reduced relative humidity at 0.1% to 9.3%. The absolute humidity increased at a minimum of 0.1% to a maximum of 9.3%, while the dew point increased at an average of 0.1°C to 0.9°C. A total of 14.05 kWh energy was generated by PV system for two months of observation. Consequently, approximately RM 13.70 and 10.41 kg CO<sub>2</sub> saved for electricity bill and carbon emission respectively. The carbon sequestration through VGS ranged at a minimum of 1, 800 kg CO<sub>2</sub> to 21, 600 kg CO<sub>2</sub> from June to July 2017.

Keywords: Carbon abatement, photovoltaic system, urban heat island, climate change

# PRE-DETERMINED PILE DRIVING ANALYZER

**Nurshuhada Zainon**<sup>1</sup>, Haziq Jamal Abdul Nasir<sup>2</sup>, Faizul Azli Mohd Rahim<sup>3</sup>, Ahmad Mirza Haji Ali Asgar<sup>4</sup>

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### **ABSTRACT**

Taking 'set' during piling is an inspection prior to and during installation, which is installed by impact hammering, vibrating or pushing into the earth. The usual method to get the reading used by the contractor is by taking 'set' manually where they use wooden rafters 1" x 2" and it requires labours stay closely to the driven piling and take reading while the pile is still impacted. Our invention aims to maximize the labours safety during taking pile set using a newly invented taking set tool, the Adjustable Pre-Determined 'Set' Prototype for Pile Installation. The design of this product was inspired from the manual method to digital pre-determined 'set' during installation of piles. The final output presents easier data collection using sensor of vibration which then plots through graph and visualized on the laptop. It is not only ease the work but also to ensure safety of labours during pile set.

Keywords: Pile installation, 'set', graph, safety, labours

# POCELLO - POACEAE CELLULOSE AS A NEW ALTERNATIVE IN MAKING BIODEGRADABLE MOULDED FOOD CONTAINER

**Anwaruddin Mohd Kasim**<sup>1</sup>, Siti Husna Anuar<sup>2</sup>, Nur Aiman Nadhirah Mohamed Ali<sup>3</sup>, Nur Fasihah Ismail<sup>4</sup>, Sarah Farhana Salleh<sup>5</sup>, Nazefa Nazarudin<sup>6</sup>.

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#### **ABSTRACT**

We had found an alternative in making a food container to replace the usage of polystyrene container which is harmful to our health. The name of our product is Pocello. It is made by using the cellulose and fibre extracted from a type of grass which is the cow grass (*Axonopus Compressus*) which is easy to make and also biodegradable. It is turned into pulp and later compressed by using the 'bagging technique'. Pocello is the best way to replace the usage of polystyrene because the polystyrene food container is made from petroleum, non-sustainable and heavily polluting resources. Other than that, it can threaten human's health and cannot be biodegrade. Compared to the polystyrene, Pocello is biodegradable, the raw material is low in cost and easy to find. After doing some test, we found out that our product is eco-friendly, resist damp and also temperature resist. Moreover, it is potential to generate income for the lawn mower person. We hope that our product will be made as a main choice in serving food to replace other types of protective packaging and containers.

Keywords: Axonopus compressus, biodegradable, cellulose, eco-friendly, natural

# BIO-INSPELTIC BAG - AS A NEW ALTERNATIVE IN MAKING GARBAGE PLASTIC BAG

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### **ABSTRACT**

The new findings to replace everyday usage of plastic bags are cymbopogon and camphor. It is improved by adding these two natural ingredients. They have many kinds of usages, but what they have in common is it can repel insects commonly flies. The name of our product is Bio-Inspeltic Bag. Bio-Inspeltic Bag is made by using composite technology which is a combination between plastic chemical and organic compound. Bio-Inspeltic Bag is the best alternative as the new plastic bag replacement because common plastic bags do not repel pests, contain a lot of chemical substances and mostly are not eco-friendly. Compared with normal plastic bag, our product is biodegradable, cheaper, easy to find, does not contaminate the surrounding, durable, eco-friendly and has the potential to generate the Malaysian economy.

Keywords: Cymbopogon, camphor, repel insects, biodegradable, eco-friendly

# CBARO STICK - PRODUCT OF CIBOTIUM BAROMETZ AS THE NEW TECHNOLOGY FOR THE NEXT GENERATION OF WOUND TREATMENT

**Dzul Najmi Sirozi<sup>1</sup>**, Aiman Nabil Abdul Fitri<sup>2</sup>, Muhammad Irfan Hamdii Mohd Rizam<sup>3</sup>, Muhammad Nafiz Na'im Mohd Nazir<sup>4</sup>, Jagdeep Singh a/l Jakji Singh<sup>5</sup>, Muhammad Zafran Zamani<sup>6</sup>

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#### **ABSTRACT**

Cbaro stick is the new medical technology to treat wounds faster, safer and more efficient than the standard medical plaster. Cbaro stick is made of a unique natural substance which is the Cibotium Barometz. Cibotium Barometz is a species of tree fern in the fern family Dicksoniaceae. C. Barometz is native to parts of China and to the western part of the Malay Peninsula. It is commonly used by the native people to heal cut or wound faster and it is believed that it leaves no scars behind after the treatment. The common medical plaster has many disadvantages such as the higher cost of production, higher complexity of production, the full use of synthetic substance that may harm the ecosystem, it produces waste and does not heal the cut or wound. Compared to the Cbaro stick, it has many advantages for instance the Cbaro Stick has lower cost of production because it can be easily found and produced. It is also produced from a natural, more eco-friendly substance and produce less waste. The most important advantage is that the Cbaro stick can heal cuts and wound. Futhermore, our product is very unique because of its design. The design replicates common glue stick to improve mobility. The stick also includes iodine in the mixture so that we do not have to rub iodine onto the cut or wound. It is hoped that Cbaro stick could replace standard medical plaster for a more efficient wound treatment in the future.

**Keywords:** Cibotium Barometz, natural, heal, design, mobility, iodine, eco-friendly

# GLYPOFISTER: AS THE BEST REPLACEMENT FOR FIRE STARTER KIT

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#### **ABSTRACT**

This product is invented to refuse the usage of fuel in starting a fire. We are using two useful substances that are organic compound and non-toxic product which are glycerin and potassium permanganate. The name of our product is GlypoFister. It is a mobilizable product. It is the combination of the substances that are being used. GlypoFister is the best alternative as the fire starter kit replacement because our product is able to build up a fire without using any fuel. Besides, the GlypoFister can be burned up for a longer period. As we are using this non-toxic product, it will able to reduce the air pollution because the amount of soot produced is lesser. Furthermore, there is still none of the fire starter kit nowadays that can start up a fire without using fuel.

Keywords: organic compound, mobilizable, non-toxic, eco-friendly

# **COMBO OIL STRAINER**

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#### **ABSTRACT**

Cooking oil is widely used by people for cooking, especially deep fry. Palm oil, olive oil and corn oil are the most commonly used cooking oil as it is derived from plants, which is unsaturated fat. However, after using the cooking oil for several times, it is found out that there are a lot of impurities left in the cooking oil. The cooking oil also can become darker in colour. In this case, the cooking oil can be subdued by a few ways. For example, the used cooking oil is filled into an airtight container and is disposed along with other garbage. In some country, there is also oil recycle company that will recycle the used cooking oil. Our objective is to filtrate the cooking oil from the impurities and other foreign particle inside the cooking oil so that it can be used back by the household for a long time. In order to do so, we have created a multi-layer filter which consists of three main layers. The first layer consists of eggshell. Its function is to neutralize the cooking oil. Next, the second layer is made up of garcinia which can absorb the dark colour of the cooking oil. After that, the third layer is made up of tea powder to neutralize the smell of the cooking oil. Lastly, the cooking oil is flowing into the fourth and fifth layer which consist of eggshell and garcenia respectively again for better result of filtrate.

# MY HOME DOT COM

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#### **ABSTRACT**

Having a house has always been part of everyone's dream. However, not everyone can afford to own a house due to the issue of discrepancy between the price of affordable houses and the income earned. The objective of this research is to develop a web-based application to estimate how much households can afford based on their certain personal financial condition. Even more, this application will come out with the potential location by using Klang Valley as a sample. By developing 'Affordable House Price Estimator', the potential homebuyers could get advantage where they can retrieve the information on the affordable house price based on their income and monthly expenses. In addition, this web-based application is also very useful to financial institutions and property developers in analyzing the trend of potential house-buyers in the urban areas.

Keywords: Affordable, housing affordability, homeownership, house price, house-buyers

# **GREEN CONSTRUCTION MATERIAL (GCONMATE)**

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#### **ABSTRACT**

Nowadays, the construction of buildings in Malaysia is very rapid. They construct the building by using different method very fast in order to finish early because the high demand from clients. Due to that, natural resources have been reduced. In this research, the new solution to replace that material is by reuse and recycle the material by utilizing the finest recycled concrete aggregate (FRCA) as fine aggregate and waste paper sludge ash (WPSA) as cement replacement to produce the Controlled-Low Strength Materials (CLSM). The WPSA was obtained from the Malaysia Newsprint Institute (MNI), in Mentakab, Pahang and the FRCA are getting from the demolished building and at the batching plant with 5 mm size of graded aggregates. A total of 72 cubes with 100 mm x 100 mm x 100 mm were prepared for the slump test, flowability test, compressive test. For the compressive strength, the sample needs to cure for 7 days, 28 days and 56 days. It found that this development contributes to the strength of the WPSA pozzolanic activities, whether it depends on the percentage of added WPSA. The workability is too low and it shows that the mixture cannot be more workable when apply on site as a backfill material. The slump test criteria also show that increasing of WPSA in CLSM that show it becomes true slump. The compressive strength of CLSM was from M1 to M4 that use different portion of WPSA and FRCA in the range of 1.212 MPa to 7.501 MPa were suitable used in CLSM because the strength was on the standard range (0.7 MPa to 8.3 MPa). The compressive strength of CLSM that state on ACI Committee 229R-99 for structural fills, pavement base, conduit bending, and void filling and product as a self-compacted, cementitious material where must be in the range of 0.7 MPa to 8.3 MPa.

*Keywords:* Controlled-Low Strength Materials, fine recycled concrete aggregate, waste paper sludge ash, compressive strength, workability

# DESIGNING ECO-FEEDBACK FOR ROOM LIGHT ENERGY CONSUMPTION

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#### **ABSTRACT**

Climate change is an environmental problem that is identified as a global issue which is closely linked to carbon dioxide emission. There are various ways to reduce the amount of carbon emission. This research investigates on how to create awareness among people toward the carbon emission and motivate them to reduce the carbon footprint from the electrical energy consumption. Web-based application system called EcoElectric is used as a medium to display energy consumption and cost involve using the eco-feedback design. EcoElectric is developed in order to allow user to see their energy consumption that contributes to the carbon footprint in their daily life. It visualizes sensed information that calculates carbon footprint, cost involves and motivates people's action which is to reduce energy consumption. EcoElectric also provides information about carbon emission and tips to reduce carbon footprint. Behaviour change and eco-feedback design evaluation have been conducted with the participants for two weeks. From the findings, it has been discovered that EcoElectric can motivate and positively change the behaviour of the participants. It also increases the knowledge about on how they can reduce the carbon footprint on daily life to save the environment.

Keywords: Carbon emission, carbon footprint, eco-feedback design, energy consumption, sensor

# **CHARCOAL BRIQUETTE MACHINE**

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### **ABSTRACT**

The demand for energy is becoming a critical challenge as the human population continues to grow. A noble way to meet these demands is to optimize available renewable resources of energy. One method is through manipulating agro waste to replace existing fuel. This paper discusses how this can be achieved by using a charcoal briquette machine. The portable (100" x 80" x 50") machine has been developed to use existing burned rice husk that are currently being disposed of through burning and has not been utilized in any other ways. This machine will produce briquette by extruding and compressing the burned rice husk. These briquettes can then be used as solid fuel. Thus, the briquetting machine converts waste to fuel.

*Keywords:* charcoal, briquette, portable, rice husks.

# THE APPLICATION OF GEOGRAPHIC INFORMATION SYSTEM (GIS) IN CLASSROOM'S FURNITURE INVENTORY SYSTEM (FIST)

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### **ABSTRACT**

Classroom's furniture inventory requires innovative and creative approach to reduce the time consumed and accuracy of data management. Traditionally, furniture inventory for a studio or classes in UiTM Perak Branch are conducted by applying conventional methods by using form and pen The methods are - less accuracy, missing forms and use longer time for inventory. As each classroom is equipped with furniture such as drafting table, drafting chair, white board and soft board, the process of furniture inventory consisting of updating furniture identification number, condition and the needs of furniture; traditional inventory methods hindrances are commonly related with inability to determine future needs, supply and space adjustments. The innovative technique that includes the application of graphic, statistical analysis, mapping and database to improve inventory data management for furniture's in the classroom and studio is highly required. Therefore, the purpose of this project is to develop a furniture inventory system (FIST) that utilize the capability of Geographic Information Systems (GIS). Data collection is gathered from 23 studios based classrooms located in Annex 2, Faculty of Architecture, Building and Surveying. The data that were are stored, geocoded and integrated with Floor Plan for each Studio Based Classroom using the GIS environment. GIS technology integrates common database operations such as query and statistical analysis with the unique visualization and geographic analysis benefits offered by maps. The application has the benefits of easier data retrieval, allocation and projection of future need of furniture in each of the studio based classroom. The developed system has great potential to be further developed and suitable to be applied to various contexts of furniture inventory for government agencies, shop offices and various institutions.

*Keywords:* Geographic Information System (GIS), Studio Based Classroom, Data Gathering and Analysis, Mapping

# **FARADAY'S POWERBANK**

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#### **ABSTRACT**

People nowadays depend too much on their powerbank whenever their hand sets reach to a certain threshold and sometimes it takes valuable time and energy to charge it back. Our innovation is about an interesting and more efficient alternative to charge a powerbank. By using the all-famous physics law-Faradays law-, we had constructed a new device that uses the everyday involuntary actions of a mere human to charge the powerbank. A magnet that resides within our device will move inside a cylindrical tube covered with HUNDREDS of copper coils. The movement will create induced current and then transferred to the power bank as power. The gadget is aimed by a wide ranged of people with different age because it is easy to use. It is also strongly related to people who uses powerbank and it is available 24 hours a day, seven days a week.

# FEEL THE SOUND IN THE URBAN DESIGN

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#### **ABSTRACT**

The urban street environment is perceived from an information where all senses act, each in different measure, but all contributing their part. Therefore, many international urban designers have reflected the idea of sustaining the acoustic environment by adopting the soundscape concept. In general, soundscape existed through the human perception of the acoustic environment. Hence, the aim of this study is to demonstrate the soundscape quality of urban streets through identifying the type of sound source and users' preference. Thus, there is a need to integrate urban soundscape concepts and urban design process as the currently understudied gap in the local academic literature. This will develop an urban soundscape conceptual framework that is intended to increase awareness to urban designers on consideration the needs of the future generations towards valuable sound act as a resource, not a waste. It is a great opportunity to bring back something that has been neglected for a long time, and a new way to feel the sound in design. In this research, a solution would be that urban designers should consider the soundscape concept into their design processes on par with the visual aspects.

Keywords: Soundscape, urban design, conceptual framework

# DEVELOPMENT OF WEB GIS USING INTERGRATION TECHNOLOGY FOR FACILITY MANAGEMENT SYSTEM OF CAMPUS

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#### **ABSTRACT**

Facility management is a form of asset management concerned with the successful and profitable maintenance, operation, and monitoring of buildings or properties. It encompasses multiple disciplines to ensure functionality of the built environment by integrating people, systems, place, process, and technology. There is an issue raised, such as no facility records in database systematically in order to ensure that all facilities are in good condition and easy to find the location. Based on these issues and problems contributing to the onset of inspiration to create a facility management system using the latest ICT technology were known as Geographical Information Systems (GIS). In addition, the combined use of GPS technology, 360 Digital Mapping Solution and drones can indirectly assist in the collection of aerial photography for the purpose of mapping the facility and assets in better position. Focused of this study is mainly on the development of geographic information systems and web-based system to assist the facility management unit to manage facility records more effectively. This study was also made to assist beneficiaries in identifying the location of facility around the campus and also to help families and students find facilities within the campus area, especially for college accommodation.

Keywords: GIS, UAV, GPS, Facility Management, Campus

### SUPER-P: NEW ADDITIVE FOR CEMENT

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### **ABSTRACT**

Palm Oil Fuel Ash known as POFA is a waste product from oil palm industry. One of the revenues in Malaysia is contributed by oil palm industries. However, the emergence of palm oil industry also creates other problems in waste management. During the process of palm oil, its create POFA. POFA is detected with high silica and alumina, which makes it as a good binding medium similar to cement. Numerous researches have been done on the potential of POFA in cement study, especially in the performance and durability properties to concrete. However, the utilization of POFA can be triangulated into an admixture to cement. Apart from that, dual effect produces by POFA can be an alternative solution to Malaysian climate. In this study, explanation on the effect to handle POFA in powder and liquid is presented. As a conclusion, inclusion of POFA as powder contributes to early strength and liquid form performs late strength effect in concrete.

Keywords: Concrete, waste, additive

# ZIPZAP TOTE SHOPPING BAG

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### **ABSTRACT**

There are many types of shopping bags available in the market to cater the different shopping needs of people. The shoppers have a variety of selection bags starting from the most basic of plastic bags to the reusable bags that are more economical and environmentally friendly. Since the introduction of a plastic bag charge and the campaign of 'No Plastic Bag Free' by certain retailers and supermarkets, shoppers in Malaysia have become much more likely to bring their own shopping bags to the streets. However, the survey also found that even though many shoppers became much more supportive by using reusable bags for their shopping, there were others who were willing to pay the 20 cents for each plastic bag given by retailers. These shoppers go for plastic bags since the current reusable shopping bags do not support the whole needs of their shopping. Most of the reusable bags in the market is designated for single use of shopping need, i.e. either for dry or chilled items only. Thus, shoppers still need additional bags which they ended up buying the plastic bags to fit their needs. The 'ZipZap Tote Shopping Bag' is designed for solution of this dilemma. This bag features three separable compartments with two standard compartments that can carry dry items and one insulated compartment for chilled or frozen items. Shoppers can have better handling of both items with one hand carry only. Thus, it can reduce the plastic bag consumption and may increase the eco-impact towards the environment eventually. In addition, by readily sorting the groceries to the three different compartments, it may save time for shoppers to unpack it when they get home. While it is not a machine washable, it has a waterproof inner liner that can be wiped down for routine cleaning and its design made it extremely strong, durable, rot and water resistant.

**Keywords:** shopping bag, reusable bag, separable compartment

### 1 HOUR RD SURVIVAL MAP FOR NOVICE

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### **ABSTRACT**

Systematic, specific and expedite report duty process is pertinent in producing productive worker and supporting organizational resource savvy initiatives. However, a structured interview was conducted at Universiti Teknologi MARA Kedah Branchamong 20 newly appointed and transferred lecturer from other branches since 2014 found that the existing report duty process was lack of coordination, disorganized and time consuming. Apart from this, surveys on other UiTM branches namely at Perlis and Kelantan are also found that there was no specific procedure for reporting duty available for academic staff. Thus, as a remedy for the absence of standardizes and systematic report duty process among academic staff, Faculty of Administrative Science and Policy Studies (FSPPP) lecturers from UiTMKedah branch has developed a Web Base application called 1 HOUR RD Survival MAP for Novice. 1 HOUR RD Survival MAP for Novice is a web based application assessable via internet connectivity containing information and attachment that offer systematic guidance for the academic staff on the process, sequence and unit involved in completing the report duty process within the timeframe of 1 hour. It is designed in the form of an easy-to-understand and navigable external link. Through this link, the new lecturers will be able to access essential information for the reporting process such as reporting procedures, contact officers, time taken to complete each procedure and also downloading the relevant documents or forms. It is hope that this user friendly Web based application initiative will contribute towards improvement of coordination among the department involved as well as provide value added time management report duty process that eventually increased the productivity of the staffs.

**Keywords:** Report duty, web based application, productivity

# GREEN CONCRETE CONTAINING RICE HUSK ASH AND COCONUT FIBER AS PARTIAL CEMENT REPLACEMENT

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### **ABSTRACT**

Concrete is one of the significant element uses in the field of construction. Through environmental concern, the studies of recycling and utilizing the agricultural or industrial waste material to be used in a concrete as replacements or admixtures has been established. This study is focused on the utilization of rice husk ash (RHA) together with a coconut fiber (CF) as partial cement replacement of concrete. The purpose is to determine the strength of concrete grade 30 when the combination of RHA and CF takes place in producing concrete. Coir has partially replaced the cement weight by 0%, 1%, 2%, 3% and 4%, while RHA replace the cement by 0%, 9%, 18%, 27% and 36% of the cement weight. The concrete strength was tested after 7 and 28 days of curing. The strength development of concrete grade 30 is applicable to concrete with 10% and 20% of cement replacement by CF and RHA. The compressive strength of concrete is decreasing with the increase CF and RHA content. The concrete strength of 7 days ages shows the most satisfactory result as the strength for 10% and 20% of replacement is well above the target strength.

Keywords: Rice Husk Ash, Coconut Fiber, Compressive Strength,

# FLOOD COMPENSATION MANAGEMENT VIA GEOGRAPHICAL PARCEL IDENTIFICATION NUMBER (GPIN)

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### **ABSTRACT**

In Malaysia, the mechanism for distributing flood compensation payment to the eligible flooded victims are one of the issues that has been questioned by communities after the flood occurance. According to the random survey conducted by division of National Security Council (NSC) Perlis, it is found that the three major problems in flood compensation payment are inefficient flood administration management, inequity of flood disbursement to the ineligible flood's victims and claims made repeatedly at the same parcel. Therefore, this research proposed Geographic Parcel Identification Number (GPIN) is introduced to identify the location of the flooded land parcel. Based on this approach, the claims for the compensation are made based on the flood victim's land parcel. GPIN's is a unique 20 numbers which represent the information of state, sub-district, coordinates, lot number of the parcel and property class. The Geographic Information System (GIS) techniques had been used as a main tool for this project. In addition, a friendly interface is created for more efficient retrieval of flood victim's informations. As a result, it is expected that any problem or falsified information could be avoided as the claim for flood compensation is made on the flooded parcel's.

*Keywords:* Flood, Geographic Parcel Identification Number (GPIN), Geographic Information System (GIS)

# **OIL SPILL ABSORBERS MATTRESS (O.S.A.M)**

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### **ABSTRACT**

Waste management or waste disposal are all the activities and actions required to manage waste from its inception to its final disposal. This includes amongst other things collection, transport, treatment and disposal of waste together with monitoring and regulation. It also encompasses the legal and regulatory framework that relates to waste management encompassing guidance on recycling. The term normally relates to all kinds of waste, whether generated during the extraction of raw materials, the processing of raw materials into intermediate and final products, the consumption of final products, or other human activities, including municipal, residential, institutional, commercial, agricultural, and social health care, household hazardous waste, sewage sludge. Waste management is intended to reduce adverse effects of waste on health, the environment or aesthetics. Waste management practices are not uniform among countries developed and developing nations; regions urban and rural area, and sectors residential and industrial. Compost is one of nature's best mulches and soil amendments, and you can use it instead of commercial fertilizers. Best of all, compost is cheap. We make it without spending a cent. Using compost improves soil structure, texture, and aeration and increases the soil's water-holding capacity.

# POTENTIAL CATHODE MATERIALS IN LITHIUM-ION BATTERY

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### **ABSTRACT**

Since three decades, lithium-ion batteries (LIBs) have been amongst the most promising chemical-electrical energy converter (rechargeable or secondary sources) for power electronic devices such as cellular phones, laptop computers, camera, etc. In early 90's, the commercial success of LIBs based on carbon, a non-aqueous electrolyte, and lithium cobalt (LiCoO<sub>2</sub>) offered great promise as being the first rechargeable battery technology for personal electronics in the near future. LiCoO<sub>2</sub> electrode gave a theoretical capacity of LiCoO<sub>2</sub> is 274 mAh g<sup>-1</sup>, but in fact, only 50% of the theoretical Li can be extracted ( $\sim$ 140 mAh g<sup>-1</sup>) when charged to 4.2 V vs Li/Li<sup>+</sup>. LiCoO<sub>2</sub> have several disadvantages such as high cost and toxicity due to cobalt. To replace the LiCoO<sub>2</sub> cathode material without sacrificing performance of the lithium-ion battery, researchers come out with lithium manganese oxide (LiMn<sub>2</sub>O<sub>4</sub>) as the cathode material. The advantages of LiMn<sub>2</sub>O<sub>4</sub> are low cost, an abundance of manganese and lesser toxicity. The theoretical capacity of LiMn<sub>2</sub>O<sub>4</sub> is 148 mAh g<sup>-1</sup> and the cells can be charged up to 4.6 V.

In this project, we would like to apply the lithium-ion battery technology using our own electrode,  $LiMn_2O_4$  in *uninterruptible power supply* (UPS) or battery backup. The common UPS using a lead-acid battery which has a higher degree of toxicity and less environmentally friendly. 12 V UPS output voltage was selected in this project. Diagram 1 shows our cells connected to follow the specification of the UPS system to deliver 12 V, 5 Ah. Each cell will deliver ~ 720 mAh and voltage 3.7 V. Seven cells were connected in parallel to give ~ 5 Ah while four cells connected in series to give 14.8 V.

**Keywords**: lithium-ion batteries, uninterruptible power supply, Theoretical capacity, toxicity

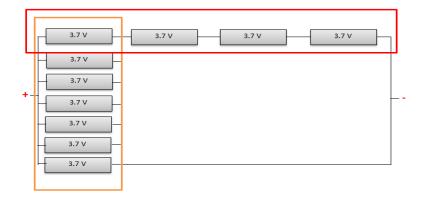


Diagram 1

# AN INNOVATIVE AERO-FACADE CONCEPT FOR WIND INDUCED VENTILATION IN HIGH RISE RESIDENTIAL BUILDING

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### **ABSTRACT**

Review of relevant studies ascertains that in Malaysia, cross ventilation mode is mostly applied in terrace houses, shop houses and low-story buildings. On the contrary, the ventilation mode inside the units of high rise residential buildings (HRRB) is permanently limited to single-sided ventilation due to the compact configuration of HRRB where each unit is surrounded by other units. Using Bernoulli's principle and venturi-effect, this study integrates the application of transom ventilation panel at door entrance and airfoil design established on building's façade to enhance wind induced ventilation and consequently improve indoor air quality. Triple airfoil slices as a novel invention consists of three symmetrical airfoils that are sophisticatedly designed and angled to create wind-induced ventilation with different pressure at the inlet and outlet area of grouped airfoils. The system efficiently works when the transom is opened, driving the air towards the outer corridor creating local cross ventilation. This innovative design can be applied in the current and new development of HRRB especially low-cost housing in Malaysia to bring comfortable indoor environment and reduce the energy consumption.

Keywords: Airfoil, wind-induced ventilation, transom.

# DOMESTIC HOUSEHOLD CULTIVATION SYSTEM FOR THE URBAN COMMUNITY

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#### **ABSTRACT**

Domestic farming garden in a city enables integration and interaction with urban consumption, socioeconomic and ecological as well as food supply system by the practicable use of resources (Gunjal, 2009). Sustainable gardening is crucial in reduction of waste directed to landfill, decreasing mixing of chemicals into stream, resources conservation as well as protection of wildlife habitat. The planning to develop a sustainable garden includes the choice of plants, environment, resources and landscape element. (Brisbane City Council, 2014). Therefore, the aim of this research is to develop a Domestic Household Cultivation System for the urban community. This aim can be achieved through the following objectives: to identify the needs of Domestic Household Cultivation System for the urban community, to establish the suitable design for the Domestic Household Cultivation System for the urban community and to construct the Domestic Household Cultivation System for the urban community. The methodology adopted for this research was a survey and through a semi structured interview from the selected urban community. Results shows that there is a need to have a ddomestic household cultivation system for the urban community. This system will encourage urban communities grow and produce their own food to meet their daily needs and reduce the cost of living.

Keywords: domestic cultivation, urban community, sustainable gardening

# **THERMOPAL**

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### **ABSTRACT**

We introduce ThermosPal. It works like a thermos or its scientific name vacuum. It works similarly like other thermos that heats up water and generates electricity from the thermal energy of water. This project has a distinction where the thermos will be modified into a Thermospal that has an usb interface that will connect the thermos with our smartphone. The purpose of this project is to facilitate people to play our electronic gadgets no matter where we are. In addition, with this Thermospal, we do not have to take our powerbank anymore. Besides we can enjoy our hot drinks while charging our smartphone.

Keywords: Thermos, electricity

# PALM ASH AS CEMENT IN CONCRETE

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### **ABSTRACT**

The Concrete is being used a lot in constructions. Concrete is made from aggregate, water and cement. The characteristic of wet concrete is that, it is wet and hard and very much depend on the ratio of water-cement and also the texture of aggregate. Due to that, other materials also used to be find as an alternative. The aim of this research is that to find out whether the palm ash can be used as alternative to concrete. Portland cement, aggregate, water and palm ash are used in this research. The palm ashes is an industrial as waste that was no commercial value, except for it is used as composite fertilizer. This research is to carried out and to compare the palm ash concrete and cement. The research that has been carried out are the cube density, the velocity of ultrasonic PUNDIT, the strength of compression, flexural strength and the ratio water absorption to cement is 0.57 for sample concrete.

Keywords: Concrete, aggregate, palm ash, alternative

# EFFICIENT AND LOW COST SOLAR PANEL FOR RENEWABLE AND SUSTAINABLE ENERGY SOURCES

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### **ABSTRACT**

This project is to develop a low cost yet efficient solar panel based on dye sensitized solar cells (DSSCs). Currently, the commercially available solar panels that can be found in households are basically made of silicon-based solar cells. DSSCs offer a greener and low cost alternative to the available silicon-based solar cells since they are much cheaper and do not require single crystal materials for their operation. Each DSSC is made from transparent conducting oxide glass (TCO) coated with fluorine-doped tin oxide (FTO), titanium dioxide (TiO<sub>2</sub>) and ruthenium dye as photoanode, gel polymer electrolyte and platinum counter electrode. Custom-made solar panel with special design has been developed and at the present stage of study is able to produce suitable power for operating small decorative items and electronic components such as calculator, light emitting diode (LED) etc.

**Keywords**: Dye sensitized solar cells, gel polymer electrolyte, TiO<sub>2</sub>, ruthenium dye

# **SORTER GARBAGE**

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### **ABSTRACT**

Modern world meets a lot of challenges that includes Smart waste management system. It is become matter of big concern if proper disposal system is not managed. Managing waste effectively and recycling efficiently, a nation can be ahead one step forward. In this work, an automatic sorter machine is developed which can sort out the wastes in various categories to make waste management easier and efficient. It can be possible to sort out metal, paper, plastics and glass by developing an electromechanical system using microcontroller and operational amplifier. For sorting metal and glass conventional sensors are used and for sorting paper and plastics a sensor using LASER and LDR is developed. A weight sensor and counter is used to find out the amount of sorted materials. By using the proper recycling system, the curse of waste will turn into blessings for the civilization. The sorting procedure will make recycling more efficient. By means of this waste sorter, the conventional waste management system will be transformed into SMART system. This SMART system will help to make our environment is more suitable for living, reducing global warming and making the world healthier.

**Keywords:** waste management, global warming

# NATLEUPHA – ORGANIC MAT OIL REMOVAL

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### **ABSTRACT**

The developing of oil industry these days caused the increasing of oil spill that turn to oil and water pollution if the problems does not overcome immediately. Hence, the studies have been carried out to improve the environment through natural resources as organic absorbent in removing oil spill. NatLeuPha was developed as organic mat in removing oil spill. The NatLeuPha was designed as a mat that consist of *Leucaena leucocephala* dried pod or in Malay word it known as 'Petai Belalang'. This plant was chosen because it is naturally available and possess desirable sorption characteristics. The NatLeuPha was prepared by treating the *Leucaena leucocephala* with Naoh to remove the lignin and impurities followed by drying and oil removal evaluation. NatLeuPha demonstrates high oil uptake, good reusability and extractability towards variety of oil waste such diesel, vegetable oil, lubricant oil, silicon oil etc. Due to that reason, the NatLeuPha has the potential to be used as an oil spill cleansing tools.

Keywords: NatLeuPha, organic mat, absorbent, oil, Leucaena leucocephala

# ENERGY EFFICIENT WALL AND ROOF: AN INNOVATION IN IMPROVING THERMAL PERFORMANCE OF BUILDINGS

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### **ABSTRACT**

Most people spend around 90% of their lives indoor. On the other hand, about 40% of total energy consumption is attributed to the building sectors. Hence, thermal comfort and energy saving are controversial issues in buildings. Most of energy losses is occurred through building envelopes such as roof and external walls. The use of thermal insulation materials or improving thermal properties of construction materials cause reduction of heat loss in buildings as it would improve energy efficiency in buildings. Concrete is the most widely used construction material in building sectors. Thermal conductivity is an important property of concrete specially for considering the amount of heat transfer through conduction in a building. Replacement of conventional coarse aggregates with lightweight aggregates (LWAs) is a valuable method to produce lightweight and low-thermal conductive concrete. Replacement of coarse aggregate with Oil-Palm-Boiler Clinker (OPBC), as a waste in palm oil industry, is an innovative method to produce energy efficient and environmental friendly concrete material. Thermal conductivity and strength of OPBC concrete proved the productivity of this sustainable concrete. In addition, energy simulation verified that OPBC lightweight concrete is an energy efficient material for building applications. The application of proposed concrete is not limited to the insulation partitions and also would be used as a structural envelope due to its excellent mechanical properties.

**Keywords:** Lightweight aggregate concrete; Thermal conductivity; Thermal comfort; Energy efficiency

# ENVIRONMENT: RECYCLE GARBAGE FOR A BETTER ENVIRONMENT

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### **ABSTRACT**

Plastic is the most difficult material to be decomposed by microorganisms. It will take hundreds of years to decompose the plastic. Indonesia is facing problem in managing garbage, there is too much plastic waste, especially the waste of drinks cup. One of the main causes is the lack of public awareness in protecting the environment. Looking at the bad habits, this project proposes an initiative to process and recycle the waste of beverage cup into useful items. This can be done by creating a craft from the cup waste in the form of wallets and bags. This activity can reduce the unemployment rate due to the empowerment of the surrounding society and increase the family income. In addition, this project can reduce the volume of plastic waste so that environmental pollution can be minimized. Gr garbage is no longer a scourge for the community, but also provides blessings for all people.

Keywords: Plastic, environment, craft, recycle

### THE OXYGENATOR

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### **ABSTRACT**

Pollutants in the air aren't always visible and come from many different sources. Smog hanging over cities is the most familiar and obvious form of air pollution. But there are different kinds of pollution, which some visible, some invisible and its contribute to global warming. Generally any substance that people introduce into the atmosphere that has damaging effects on living things and the environment is considered air pollution. Carbon dioxide, a greenhouse gas, is the main pollutant that is warming the Earth. Though living things emit carbon dioxide when they breathe, carbon dioxide is widely considered to be a pollutant when associated with cars, planes, power plants, and other human activities that involve the burning of fossil fuels such as gasoline and natural gas. In the past 150 years, such activities have pumped enough carbon dioxide into the atmosphere to raise its levels higher than they have been for hundreds of thousands of years. Industrialized countries have worked to reduce levels of sulfur dioxide, smog, and smoke in order to improve people's health. But a result, not predicted until recently, is that the lower sulfur dioxide levels may actually make global warming worse. Just as sulfur dioxide from volcanoes can cool the planet by blocking sunlight, cutting the amount of the compound in the atmosphere lets more sunlight through, warming the Earth. This effect is exaggerated when elevated levels of other greenhouse gases in the atmosphere trap the additional heat. So, our robot was built initially to clean air with installing a device that can transform dirty air into clean air and thus supply oxygen. We used an electrolysis device to supply oxygen. Here, we named it the oxygenator.

# 3PS - PMT PUBLIC PRIVATE PARTNERSHIP

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### **ABSTRACT**

In ASEAN, Malaysian Public Private Partnership (3Ps) projects have been ranked as the second highest country on its infrastructure development. In this regard, the Malaysian government has set a target to become a developed nation under the 'Vision 2020' country plan to meet the high demand for public infrastructure development. Therefore, 3Ps is anticipated to be one of the drivers of such developments. In Malaysia, privatization of public projects and 3Ps projects has begun since the 1980s and this trend has continued and maintained until the Eleventh Malaysia Plan (2016-2020). Among the crucial elements in the 3Ps implementation is specifying the standard assessment of private concessionaires' performance through the execution of key performance indicators (KPIs). Currently, KPIs has served as the useful performance measurement tool (PMT) in measuring performance of 3Ps projects. However, the methods performed in assessing the performance of 3Ps projects have been criticized among researchers during the implementation of 3Ps projects in Malaysia. Therefore, 3Ps-PMT was developed to assist the construction stakeholders to overwhelm this issue. With 3Ps-PMT, the performance level of the 3Ps projects can be measured easily and more realistic to ensure value for money (VFM) is achieved. The facility offered by 3Ps-PMT can also be adopted as a very effective Performance Audit Tool for continuous learning in 3Ps project management.

*Keywords*: Key Performance Indicators, Operational performance, Performance measurement tool, Public Private Partnership.

# SURFACE TREATMENT METHOD FOR IMPROVING RECYCLED AGGREGATE PROPERTIES

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### **ABSTRACT**

The use of recycled aggregate (RA) for concrete production reduces the deposition of massive solid wastes into landfill areas, conserves natural aggregate resources, and even offers economic value for the construction industry. However, technical problems are encountered when using RAs obtained from crushing concrete waste. The physical properties of RAs are generally different from those of natural aggregates. RAs are composed of natural aggregates and a specific amount of adhering mortar that surrounds the original aggregate particles. Moreover, the impact stress caused by crushing renders the surface layer of RAs weak and brittle, thus producing RAs that are relatively more porous, weaker, and of higher water absorption capacity compared with natural aggregates. When RAs are incorporated in new concrete, their high water absorption capacity causes internal bleeding, which causes difficulties in controlling the effective water/cement ratio. This situation affects the workability of fresh concrete and consequently influences the strength and durability of hardened concrete. Hence, the unfavorable properties of RAs limit their widespread use in the construction industry, especially in structural concrete applications. Surface treatment has been proposed to overcome the weaknesses of RA and to improve RA quality prior to mixing. This method involves a multiphase treatment process using suitable admixtures to improve their physical surface as well as reduce the porosity of RA. This study proves that surface treatment significantly reduces internal bleeding and strengthens the bond between the RA and cement paste, thereby enhancing concrete performance. This study proposes a new method to increase RA quality for the commercial and sustainable use of this material in large-scale concrete production in the construction industry.

Keywords: Concrete, recycled aggregate, surface treatment

# **DISASTER BAG: SAVE YOUR DOC!!**

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### **ABSTRACT**

The most devastating natural disaster that we Malaysian face often is the flood. With heavy rainfall received during October and March, the east coast of Peninsular Malaysia is seems most affected with destructive monsoon flood. There are two types of floods generally, which are the flash floods and monsoon floods. The flash floods normally occur at urban area with improper drainage and planning system. Another implication due to heavy rain is the landslide. When these natural disasters struck, people tend to panic and are trying their best to save their lives. However, it is often that we tend to forget to bring the important documents along with us when we rescuing ourselves. Therefore this bag is specially designed to cater all those documents when in rescue. The 7 compartments bag to be inserted with those important grants, identification documents, certificates, toiletries is easy to carry out and foldable to be grab with when in rescue. By having this bag at home, we can have our important documents with us when we evacuate to other safer place. Furthermore, this bag can be used as the sleeping bag or prayer mat alternatively. The compass is attached on the bag as a reference for qiblah. It is a made of plastic in order to protect the documents inside.

. Keywords: disaster, documents, foldable, bag

# HIBISCUS PAPER: NATURAL ECO FRIENDLY PAPER FROM HIBISCUS PLANT

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### **ABSTRACT**

Hibiscus was crowned as a national flower of Malaysia. Belonging to the Malvaceae family, the Hibiscus is characterized by a trumpet –shaped receptacle, five petals and a long pollen tube. Hibiscus is a flowering plant which is typically grown in warm tropical climates, especially in Malaysia. It is commonly found in the rural areas where the plant function as hedge fencing for houses. The flower blooms throughout the year the plant require little maintenance. Part of the flowers can actually be used to make tea, jam, spices and sauces. The flowers are also used to make medicines. However, this plant has not been commercialized yet. This plant actually can be processed to create an eco-friendly paper. Besides, the flowers are available in several colours from red to orange, purple to white and even multicoloured. Therefore, the paper produced from Hibiscus is eco-friendly coloured paper. On top of that, the paper produced from Hibiscus flower is durable, pretty as it is multicolour, and low production cost as compared to timber. The paper is also suitable to be used in producing cards and paper bags. The use of Hibiscus flowers and plants in producing paper will also contribute to the sustainability of the environment. Besides, the use of Hibiscus plant as a substitute material in producing paper will enhance the oxygen level as less use of timber and preserve our environment. -The Hibiscus eco-friendly paper has its own unique and creative value as it is a Malaysia's national flower and thus, it is commercializing Malaysian identity in this paper.

Keywords: paper, eco-friendly, multicolour, unique

# 'HYDRIC' POWER GENERATOR

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# **ABSTRACT**

With technology continuing to be developed throughout the world, a huge amount of energy is essential to make sure that our daily energy requirement can be achieved; from turning on a bulb to powering a city. We should think of a concept that can generate cheap and affordable energy that can be used by people all around the world. Our problem statement is that we lack an effective renewable energy source. This is the reason why our team focused on a new potential source; the waterfall. Our team aims to utilize the force of the impact of water as it touches solid matter. The kinetic energy absorbed by the water at the bottom of the waterfall can be harnessed to produce electricity via a multi piezoelectric generator.

**Keyword:** Energy

### SINT TERRA

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### **ABSTRACT**

In our everyday lives, our community has to face many kinds of problem in their daily routine especially on cleanliness. As you can see there is a lot of rubbish that are making the environment dirty especially in this country. The trash can provided to the community has not been used wisely. There is still a lot of rubbish on the environment, even though there are a lot of trash cans. The rubbish that people dump did not go into the trash can but instead there are on the trash can lid and just beside the trash can because people just do not care whether it is in the trash can or not. These means that the trash can provided is not useful. This product is designed to meet the needs of the community which can solve these problems and help improve the cleanliness of our environment. Overall, the project will teach the people to throw the rubbish correctly inside the trash can. This tool can reduce labor and improve the quality of a better job in ensuring that the level of hygiene is maintained. This will help to ease the burden of the community, especially in Malaysia and across the globe as well.

Keywords: community, environment

# INTELLIGENT REAL-TIME INTEGRATED SYSTEM FOR SUSTAINABILITY (IRISS)

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### **ABSTRACT**

Development is an essential for the humanity. Unsystematic development would only project negative effects towards the environment. Therefore, the analysis of the impacts towards the environment is one of the best solutions to this problem. In the status quo, the developers use conventional methods such as scheduled site visits and also off-line recording. These methods have a lot of cons such as incomplete data recordings, data security is not secured and it is costly. **Intelligent Real-time Integrated System for Sustainability (iRISS)** is designed to transform the collecting data method to measure the impact towards the environment <u>before</u>, <u>during</u> and <u>after</u> the development. **iRISS** provides the data directly (live streaming) through the Internet of Things (IoT), cloud computing and web. **iRISS** uses renewable energy of the observed place. **iRISS** can be programmed to record various types of data depending on the consumers' wish for 24 hours. It also has specific mechanisms to avoid threats and the preparation for communications anywhere. The data recorded will benefit the policy makers, developers, environmentalists and others as well. To have a try, we have chosen the project of Ara Panjang Hot Spring in Perak. This project is in its progress to choose the site where it should be built as a strategic recreational centre.

Keywords: Sustainability, environment

# ALUM RECOVERY FROM WASTE SLUDGE BY ACIDIFICATION PROCESS

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### **ABSTRACT**

Sustainable management in recycling alum sludge is an economically and environmentally approach for a significant environmental concern and a life cycle assessment (LCA) of alum usage in industries. Aluminium Sulphate Al<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub> also known as alum is the most commonly used coagulant in water treatment plant. It produces large amount of alum sludge to be discarded to sludge lagoon. Alum sludge still contains high concentration of alum that can be extracted for further reuse. Therefore, the objective is to analyse the effect of acidification towards alum recovery capacity on water treatment sludge and to determine the optimum dosage of acidification in achieving highest recovery of alum. Sulphuric acid is used as an acidification agent to leach and extract out the alum concentration in the sludge. There are several laboratory procedures applied such as dewatering the alum sludge, mixing rate selection, digestion process with RO water and acidification with sulphuric acid to increase the extraction capacity of alum recovery. Various weight of alum sludge was examined with compound dosage of sulphuric acid to obtain the percentages of recovery. Inductively coupled plasma optical emission spectrometry (ICP-OES) used to determine the alum concentration from each sample. Based on the results, the alum recovery can achieve from initial concentration of 4.093 mg/L to final concentration of 256.639 mg/L. There is an increment of recovery which equal up to 61.70 x10<sup>2</sup> %. The recovery alum can be further used in other industries such as additive for concrete.

**Keywords:** Aluminium sulphate Al<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub>, Alum sludge, Acidification, Sulphuric acid, Alum recovery.

# **ENTREPRENEURSHIP**

# PERCIK MERECIK POWDER

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### **ABSTRACT**

Percik means 'splash' in Malay language. In this context, Percik is a style of marinade comprised of flavorful Malay spices with coconut milk as its base. It is believed that the dish of Ayam Percik (Grilled Coconut Spiced Chicken) is originated from the Northern States of Kelantan, Malaysia. With the idea of Ppes Percik (percik paste), the Percik Merecik Powder was invented to compete with the other types of powder which are available in the market. This product was introduced and innovated from the paste to powder. Percik Merecik Powder has emphasized on healthy food options, which are no MSG, artificial coloring or artificial. The ingredients used is a special blend of high quality natural herbs, spices and other ingredients which gives the most authentic and tasty meal consumer have ever tasted. The product is perfect for marinating chicken, meat and seafood. It can be prepared just only by adding coconut milk or water and a little of seasoning to suit the consumers taste. With its complete marinade, easy cooking steps and precise portioning in a pack, Percik Merecik Powder will help consumers to produce consistent cooking results every time. The product has an aromatic fragrant even though it comes in powder form. The aroma from the fresh ingredients stays in every pack. The convenient packaging feature that Percik Merecik Powder has will accommodate travelers to bring this product along so they can bring the product wherever they go.

Keywords: Percik, powder, natural herbs and spices, convenient

### **eFOODCART**

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### **ABSTRACT**

The eFoodCart application is a student-friendly application for online food ordering in which the idea and concept is similar to some existing applications such as *Lazada*, *Just Eat* and *Pizza Hut Delivery*. The purpose of this application is to allow the residential students of UiTM Perak Branch, Tapah Campus to order their food via mobile devices. This is a secure and time-saving application for students as they are required to register to the application using their student ID. Besides the students, vendors are also required to register to eFoodCart application. This is to ensure security and prevent any fraudulent act for both parties. The registration is free but eFoodCart will gain RM 0.10 of profit for every item sold. Furthermore, this application provides a systematic way of selling and ordering food. Thus, it is more convenient for the vendors and their customers to communicate via eFoodCart application without having any physical stall.

**Keywords:** Mobile application, online food ordering, students, vendors

# SAYAJUAL BASIC SALES BOOSTER

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### **ABSTRACT**

Recently, the statistics from Companies Commission of Malaysia has indicated that, the numbers of new small business has increased rapidly. However, many among the small business owners did not equipped themselves with the basic knowledge of doing businesses. Getting confused with the trending on business approaches in social media, many of them keen to hard-sell their products by using the social media ads. This phenomenon can clearly be seen in Malaysian market for niche business via the Facebook and Instagram platform. Therefore, due to lack of basic business knowledge, many of the small businesses are only able to sustain its existence in the market place with an average duration between 1-3 years of establishment.

SayaJual Basic Sales Booster (SBSB) is a business productivity tool that helps business owner; who lack of basic knowledge in doing business, to enhance their business progress and focus on what they are supposed to do; Instead of randomly carry out the marketing and sales activity which may cause the business to increase its unprofitable expenses. SBSB will help the business owner to properly construct and execute a sales plan based on desired sales target, take on rightful action to get more sales, establishing profitable marketing activity and check on overall progress of their business endeavour.

Keywords: Sales, Small Business, Selling, Entrepreneur, Business

# EZCOZY TELEKUNG - A HASSLEFREE PRAYING ATTIRE

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### **ABSTRACT**

Praying five times a day and performing the Hajj are two of the five pillars of Islam that all Muslims, men and women are required to fulfill as a declaration of their faith and obedience to their creator. In performing these rituals, they have to abide by certain procedures and for the Muslim women in particular, they have to ensure that their whole body is covered excluding their face and hands. However, the task of ensuring that they are perfectly covered when performing prayers and the Hajj rituals is proving to be a challenging task for the Muslim women because it requires a lot of movement. Furthermore, the crowded conditions during the Hajj season intensifies the difficulty to maintain covered. Therefore, EZcozy "telekung" is a prayer garment created with the intention of helping Muslim women to overcome this problem. "Telekung" is a prayer garment that is usually worn by Muslim women in some parts of the world to perform their prayers. The specialty of this "telekung" is that it uses a combination of "moss crepe" material for the body part of the telekung and "lycra" material for the head. The combination of fabrics is ideal because it is cooling and lightweight, dries quickly and does not wrinkle easily. The uniqueness of this "telekung" is that it is designed like a "jumpsuit" (one piece) to facilitate the movement when performing prayers. In addition, there is a hidden pocket sewn at the side of the "telekung" to store personal belongings. Ezcozy "telekung" can also be used as a daily attire that is "solat (prayer) ready" and thus helps solve the predicament of getting a comfortable garment to perform the daily prayers. We are confident that Ezcozy "telekung" will help Muslim women from all over the world to not only be able to perform their prayers anytime, anywhere but also preserve their modesty (aurah) while performing their prayers.

Keywords: Aurah, prayers, Telekung

# CAMPGEAR ESSENTIALS: PORTABLE, EFFORTLESS ASSEMBLY AND MULTI-PURPOSE SLEEPING TENT AND WORKING TABLE FOR CAMPING ACTIVITY

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### **ABSTRACT**

Camping is an outdoor activity that currently attracts the enthusiasts. It is gaining popularity with the newer generations for main outdoor activity due to online advertisements with more sites introduced and improvement in site conditions. Nowadays, the purpose of camping is not only as a hobby and relaxation but also for connecting with family and friends. It is also beneficial as a stress mediation and to reconnect ourselves with nature. Even though camping is a commonly known activities, preparing for and executing a camping trip can be a daunting experience, especially for novices. During camping, campers have to consider many activities, from setting up a tent to preparing food. To alleviate these issues, we have developed a product that was specifically designed to tackle campers' major issues; that is preparing sleeping tent and work table. As a solution, the product combines two most essential tools for camping that is a portable tent with a multi-purpose table. The product main function is a single person tent where it is made from a highly durable waterproof material that can be easily assembled with one step without fiddling multiple items. The product also includes a multi-purpose table where it can be used to place items and also be used as eating table, the table can also be expanded to a barbeque pit to grill while camping. Apart from the main tools, the product also provides convenient storage spaces where it can store other camping essentials such as cooking utensils, a pack of matches, rope, map, compass, pocket knife and etc. The combination of convenience, practicality and mobility can be benefitting to campers as it can be carried around easily on any terrain and also lightweight. The material that is used for the product is aim for long lasting use, lightweight and waterproof especially in challenging weather and conditions. New campers will appreciate the usefulness of this product as it will make their camping experience more engaging and pleasant.

Keywords: Camping experience, convenience, multi-purpose, practical, mobile, durable

### SAFE KID RIDER

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### **ABSTRACT**

Kids' safety during riding are always neglected by parents. Kids ride motorcycle without a proper safety belt is a common view in Malaysia road. We can see how kids are placed in the back seat without proper safety measures and parents are depending on their small hands to hold themselves in place. This act is totally dangerous, unsafe and may lead to accidents. Awareness level among parents is relatively low and this needs to be changed to keep our small kids safe on the road. Therefore, Safe Kid Rider is invented to promote safe act among kids while riding motorcycle with their parents. Safety Kid Rider is a safety belt worn by kid and it will attach to parents to make sure kids are always in place. This special belt is equipped with breathable seat, protection strap and reflective strap makes it suitable to be worn day and night. This belt is made from recycle materials such as used school bag and sew together to such design. This bag is affordable and meant to be used widely to low income family.

Keywords: safe rider, safety measures, safety belt

# SYSTEMATIC OPERATIONAL BUDGETING FOR SME ENTREPRENEURS (SOB)

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### **ABSTRACT**

Inability to apprehend the required financial and management skills are blamed to be the fathom of failures of small medium enterprise (SME) in Malaysia, as reported by Beh (2013). Small business is a critical contributor to Malaysia's economic recovery and strength, to building Malaysia's future and to compete in today's ever-challenging global marketplace. Realizing the above, it drives the motivation of Systematic Operational Budgeting (SOB) to be invented. SOB is a simple costing application. It has an easy, user-friendly interface that can be used in handheld. The use of SOB does not require an advance accounting or financial knowledge. It helps to compute basic costing since the costing numbers are important information in forward planning for business profitability. The uniqueness of SOB is that it offers a proper record detailing the cost of materials, labours and overhead where entrepreneurs are able to monitor and control their investment on those costs. As a result, this system offers a solution to the basic fundamentals of successful small business entrepreneurs. Finally, this system has high potential to be commercialized since it has ability to lead for better SME transformation and empower entrepreneurship towards a sustainable economy.

Keywords: SME, budgeting, costing system, financial management.

# ECONOMICAL HUMANOID REMOTE SENSING FOR FIRE FIGHTING [ECON FF]

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### **ABSTRACT**

Our world is currently facing the global warming that may lead to more forest fire and fire disaster occur as everything gets more flammable due to the high temperature of our earth's atmosphere. Therefore, an Economical Humanoid Remote Sensing for Fire Fighting is essential to reduce the damage caused by natural or human made fire disaster. In addition to that, the capability of this invention, able to detect and extinguish fire autonomously is crucial. This is due to the fact that an uncontrolled fire can obliterate an entire room's contents within a few minutes and completely burn out a building in a couple hours. The developed system is a dual tasking invention whereby the robot performs continuous monitoring for flame through self patrolling within the pre-defined path. Secondly, the designated intelligent multi sensor based robot has the ability to detect fires as well as extinguish the fire autonomously in the shortest time without any human intervention. This ECON FF incorporates many of the features and makes it into a single, holistic device in order to reduce the damage caused by natural or human made fire disaster. This invention has the function to communicate with the user, and sending warning messages to a nearby fire station upon detecting fire with the help of GSM Communication.

**Keywords:** Fire disaster, self patrolling, extinguishes autonomously

# ELECTRONIC ACCOUNTING SYSTEM FOR MICRO FOOD INDUSTRY ENTREPRENEUR (E-SPIMM)

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### **ABSTRACT**

Accounting is commonly known as a discipline of preparing financial statement which dealing with numbers crunching and recording cash movements via the use of accounting system (Abu Bakar 2001). However, its scope of coverage covers a wide spectrum of structural and non-structural relationships with others. This includes information systems, organizational structures, human behaviour and other aspects of budgeting, planning and decision-making processes within an organization. Unfortunately, many owners of Small and Medium Enterprises (SMEs) are lack of skills to keep adequate records. As a result, the SMEs operators fail to make timely and sound decisions. Being the backbone of Malaysia economic growth, this issue need to be overcome. Therefore, e-SPIMm system is developed for the owners of SMEs (explicitly for micro level business) in order to aid them to prepare financial reports even with minimal accounting knowledge. The e-SPIMm system consists of four (4) sections; collection record system, payment record system, costing system, and auto-generated financial statement system. The system generates financial and management statements automatically that acts as a tool for the owners of SMEs, especially the micro level business entrepreneurs, in making sound and timely decisions for their businesses.

Keywords: Accounting, entrepreneurship, Small and Medium Enterprises, accounting system.

# MOWANA: MOWANA SHOES "COLORED MOTIVE"

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### **ABSTRACT**

This project aims at creating new innovation on shoes by making the shoes easily to be changed into different color motive at any time as we want. Mowana shoes is an innovation of modern shoes with modifications using snap buttons mounted on the base of the shoes and a leather motive attached to the body of the shoes. These shoes are made as a solution for young people who always want to look stylish with a cost-effective. Mowana shoes are produced using a canvas material because this material is very easy to get and the price is cheaper. Each pair of shoes will be offered for 225.000 rupiah including the shoe outer skin. Mowana will be produced in cooperation with shoes craftsmen in the village of Wirokerten, Banguntapan, Bantul - Daerah Istimewa Yogyakarta. So, it can help to increase revenue for partners and help the government in reducing the unemployment rate and improving human resources in Yogyakarta. The marketing process will be through two ways. First, direct sales to the youngs as a target market around the campus area as well as other opportunities/events. Second, indirect sales by offering and promoting products through social media, websites and online forums. This can make the product more publicly known.

Keywords: Innovation, Snap Button, Solutions, Canvas, Marketing

# GIC CONVERTER

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### **ABSTRACT**

GIC Converter is a tool design for measuring firms' key profit drivers. GIC or Green intellectual capital is defined as knowledge resources embed in human, organisation and relationships which address the environmental issues. The tool consist of green intellectual capital (GIC) data and its 4 sub-constructs namely green human capital (GHC), green innovation capital (GNC), green organizational capital (GOC) and green relational capital (GRC). The main function of this tool is to assist firms, investors and NGOs to analyse whether the green intellectual capital practices by firms are profitable.

Keywords: Green intellectual Capital, Profit

AGRO BASED PRODUCT & TECHNOLOGY

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## PERSONAL E-BUDGETING

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### **ABSTRACT**

The knowledge to manage personal finance is critical especially in current situation. A sound financial practices particularly on savings and prudent spending must be cultivated amongst the citizens and it is even more significant for the young generation and newly employed graduates. The financial knowledge among young people had caught the interest of the Credit Counselling and Debt Management (AKPK). This is due to the rising case of bankruptcy among young executives. According to the statistics by Malaysian Insolvency Department (MDI), the number of bankruptcy case in 2007 from13,238 had increased to 16,228 in 2009 and continue to rise to 19,167 in 2011. On top of that, from 2005 to March 2012, there were 243 823 bankrupts cases and the total showed a 45% increase in the last 10 years. The reasons were mostly caused by car loans (25%), personal loan (13%), other loan (21%), housing loan (13%) and credit card debt (5%). Hence, this project was developed to address this alarming scenario pertaining to the limited financial management knowledge among youngsters. The aim of this project is to encourage people to have the habits of saving money and record their all their expenses and income via a systematic and structured platform. The system is a free, simple and user friendly personal budgeting website that incorporates element of security.

**Keywords:** personal budgeting website, financial management, debt-free citizens

## I-BOOKED SYSTEM FOR RENTAL OF UITM FACILITIES

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### **ABSTRACT**

*I-Booked* system is an online system booking of UiTM facilities for rental by the public. Systematic booking system online will reduce the problem of information management related to UiTM Facilities. By having this *I-Booked* the loss of information regarding the facilities booked will be solved, information of UiTM's facilities that are still available for rental can be easily identified and know by the public, and also authority acknowledgement and permission by the respective party will help the quick decision by the management of the facilities. This in a way will reduce the decision making problems due to uncertainty of information regarding the facilities for rental in UiTM Cawangan Perak. The current practice related to rental of facilities in UiTM are still lacking where there is no standard of procedure for rental facilities to the public, database on the UiTM facilities that can be rented out are not available to be referred, decision making always become a conflict because of this unclear authority of the respective party involved. Hence this system is to be developed with the aim to provide an integrated information system on UiTM facilities that are available for rental. In order to achieve this aim there are two objectives are formulated which are: (i) to identify available facilities for rental that are provided by UiTM Cawangan Perak, (ii) to develop framework on the facilities procedure on rental.

**Keywords:** I – Booked system, UiTM Facilities and rental

## G.A.S.P: AGRICULTURE THROUGH DESIGN APPROACH

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### **ABSTRACT**

The attacks of Golden Apple Snails always ruined paddy and unprofitable to farmers, consuming more time and money to transfer effected paddy plot by applying infill process, a process where the effected paddy transplanted to another paddy plot. Thus, this problem prompted the researchers to identify and understand this phenomenon. The researchers come out with the best prevention in controlling the G.A.S and proposed design to help the farmers to ease the problem that currently faced by them. The researchers explored the problem and solution, evaluate the solution through investigating user behaviour and describe the solution through usability testing. Based on this research, the researchers have designed a hand tools to take the eggs of golden apple snails.

Keywords: Golden Apple Snail, Paddy, Agriculture

# INTEGRATED AUTONOMOUS FEEDING SYSTEM FOR AQUACULTURE APPLICATIONS

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### **ABSTRACT**

On a global scale, more than half of the raw material for fishery products are being supplied by aquaculture industry. In aquaculture, farming fish under controlled conditions required a high quality system to manage efficient fish feeding operations. In order to enhance productivity of the aquaculture industry, a cost-effective feeding management system was developed by integrating microcontroller based circuitry to conventional fish farming. The system enables automatic feeding mechanism with controllable frequency.

Keywords: Aquaculture, Feeding system, microcontroller

## **CROWN PAPER: SCRAP FROM ANANAS COMOSUS**

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### **ABSTRACT**

Ananas comusus (pineapple) is widely cultivated tropical plants in Malaysia. Their leaves of this plants are mostly has been left as waste without turning them to good use. The leaf contains multicellular lignocellulosic fibre important for making fibre-type product. The objective of this research is to produce a paper from pineapple leaf fibre (PALF). In this research, paper was produced by chemical pulp processing. The pulp was produced from the pineapple leaf fibre by cooking the fibre with the addition of sodium hydroxide with the amount of 25% from the weight of fibre. The pulp obtained undergone a screening process, by removing hard and large fibre and other unwanted material. The pulp then disintegrated, refined, filtrated, and finally drying the paper. Tear, tensile, burst and Freeness test have been conducted to determine and confirm the mechanical properties of PALF paper. Based on our result from the test, the value of tensile index, burst index and tear index are 57.58 Nm/g, 5.96 kPa.m²/g and 0.477 mN.m²/g, respectively. The paper has stronger tensile, burst index, and tear index compared to normal paper. Therefore, the mass production of papers can be improvised by using fibres pineapple leaf instead of wood in order to reduce deforestation.

**Keywords:** Ananas comosus, Pineapple leaf fiber (PALF)

## SMART GREENHOUSE CONTROLLER (SGC) BOX

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### **ABSTRACT**

Agriculture-based innovation is vital in ensuring continuous supply of raw food materials. Arable lands are equipped with essential nutrients needed by plants. However, these lands are manipulated by various biotic and abiotic interactions that disrupted the growth of crops. As far as Malaysian field and climatic conditions are concern, traditional methods of farming are not convenient anymore. A systematic controller should be used in enhancing farming activities and promote quality maintenance. Therefore, Smart Greenhouse Controller (SGC) Box is innovated. This integrated system encompasses of three main components which are auto watering system, temperature and light control as well as aquaponics pond. All these sensors are embedded in the microcontroller-based system and activated when reading of sensors below the threshold level. Energy supply in this system is harvested from alternating current (AC) and installed with light-emitting diode (LED) which makes the crops more resistant towards harmful pests. Sensors for water and temperature are set at specific value depending on the plant species and response. These controlled parameters ensure the microclimate inside the greenhouse at optimal level as required by plants. This is an ideal multifunction automated system that can be adjusted and reprogrammed to suit in different type of environmental conditions.

Keywords: microclimate, humidity, temperature, microcontroller-based.

## NATKAP - INTEGRATED MOBILE OIL REMOVAL

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### **ABSTRACT**

Recently the oil spill occurs in our country, especially near to the industrial and developing area is getting worse day by day. Oil is one of the main sources that contribute to marine pollution. This project aimed at developing an integrated mobile oil absorbent from organic component: kapok (NAtKaP) as an alternative material for oil treating in the market. Kapok is a fascinating choice because it is naturally available and posses preferable sorption characteristics such as large lumen, excellent hydrophobic and oleophilic property. The NatKaP was prepared by treating the kapok with sodium hydroxide to remove its wax followed by drying process and oil removal assessment. NatKaP demonstrates high oil uptake up and good reusability and oil extract-ability. Finally kapok based absorbent in the form of integrated mobile oil removal were prepared. Due to high oil sorption capacity, excellent hydrophobic property and reusability, the NatKaP has the potential to be used as an oil spill cleaning tool.

Keywords: NatKap, kapok, mobile, absorbent, oil

## **SMART ACCOUNTING FOR FERTIGATION PROJECT (SAFPRO)**

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### **ABSTRACT**

Smart Accounting for Fertigation Project (SAFPro) is an application developed to help farmers and managers of \_the fertigation agricultural project to key in cost and any financial information relating to the project. This application consists of 1<sup>st</sup> tier where the expenses and revenues of the fertigation project will be determined. The 2<sup>nd</sup> tier consists of payroll and inventory management. Finally, the 3<sup>rd</sup> tier is where the application will extract the cash flow statement, profit and loss statement and statement of financial position based on the information gathered. This application will help farmers and managers to keep track of how well their business or fertigation project is performing, the viability of the project and to plan what action, if any, they need to take. It is practical to be used by all levels of agropreneurs who run fertigation project at any scale. Thus, it has a huge potential to be commercialized to all agroentrepreneurial clubs (i.e. Kelab MyAgrosis) established in local universities to smartly manage their accounts for fertigation project. Playing an important role as a teaching and learning tool in handling accounts for the agro-entrepreneurial clubs, it will contribute to government's 'Blue Ocean Strategy' in producing modern agroprenuers among graduates.

Keywords: Accounting, fertigation, agroprenuers, cash flow, profit and loss, financial position

## INSTANT INSTALLER MACHINE

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### **ABSTRACT**

Installer Instant Machine is specially designed to help farmers filling the poly bag for nursery purposes or planting. This equipment is able to help them employ a minimum workers as well as save a lot of time. Therefore, they are able to save budgets and quicken the process of filling the soil into the poly bags. This machine will accelerate the quantity of poly bags for planting purposes. Manual bagging will take longer time as they have to fill the soil one by one. The equipment facilitates the filling into the poly bags with the same amount of soil. The research has been done collaboratively with the help of Pejabat Risda Daerah Kecil Selama Perak and Pusat Latihan Teknologi Tinggi (ADTEC), Kulim in designing the equipment's capability. It has been tested via several process namely identifying the problems, constructing the equipment with the best tools and applying the equipment at RISDA's Nursery located in Kampung Sungai Dendang, Selama, Perak.We believed that our Installer Instant Machine has commercial value that will attract many nurseries, FELDA, FELCRA and RISDA.

Keywords: Filling, save, accelerate, facilitates, commercial

## **QUACK ACCOUNTING HELPER**

**Amizahanum Adam**<sup>1</sup>, Nor Asyiqin Salleh<sup>2</sup>, Noorzarina Noordin<sup>3</sup>, Haslinawati Che Hassan<sup>4</sup>, Mohd Shatari Abd Ghafar<sup>5</sup>

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### **ABSTRACT**

Agrofood industry is one of the important areas in the country that able to provide a platform for income generation among Malaysians. The Ministry of Agriculture & Agro-based Industry set a target of an increase of 5% in the Malaysian' Gross Domestic Product (GDP) in Agrofood Industry in the year 2025. In Malaysia, the agrofood industry range from agriculture, live stocks and fisheries. An example of live stocks is the duck farming industry. The business could vary from breeding duck farm, stock farm, slaughtering house and processing food such as duck' eggs and meats. The state of Perak has been identified to have the highest number of ducks (i.e. 7,943,753 ducks or 73%) as a livestock population comparison to all states in Malaysia (Dimensikoop, 2017). This provides us an opportunity to promote our accounting application, i.e. Quack Accounting Helper to those in the duck farming industry. The Quack Accounting Helper is an accounting application which aims to help those small and medium companies which might have a problem maintaining and keeping their business accounting transactions and records. Quack Accounting Helper offers various accounting functions such as 'Account', 'Income', 'Expenses', 'Supplies' and "Reports' to help users in handling business records in an efficient manner. Users of this application may enjoy unlimited advantages such as simplify data entry job, speed up the recording process, automate functions and automated reports and analysis. We hope by introducing Quack Accounting Helper to these local entrepreneurs, it could help them to improve their record-keeping functions, thus directly helping them to meet one of the National Agrofood Policy (2011-2020), which is to increase the income level of agropreneurs.

**Keywords:** accounting software, bookkeeping, duck farming

## SUSTAINABLE CEMENT BASED COATING MATERIAL FOR FIRE PROTECTION OF STRUCTURES

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## **ABSTRACT**

Fire safety of buildings are always a significant aspect of building. The use of fire-resistant building materials and enhancing fire protection of timber, steel and concrete structures is a need for modern buildings. To achieve this, modification on composition of traditional mortar/concrete which is largely dependent on Ordinary Portland Cement (OPC) has become a trend. Palm Oil Fuel Ash (POFA) is an ash from burning of agricultural wastes in palm oil industry in the countries such as Malaysia. It is a pozzolanic material which can be used as cement replacement in mortar/concrete production. The objective of this research is to produce POFA-substituted cement based material which can be used in building structures to improve fire resistibility of structural elements. It was found that the mortar incorporating POFA has almost 20% higher residual compressive strength compared to the mortar containing only OPC when both mortar specimens are exposed to an elevated temperature of 600 °C. POFA can notably improve the fire resistibility of cement based material and can be used as a coating material to improve fire resistant of timber and steel structural elements.

Keywords: Mortar, palm oil fuel ash, fire resistance, compressive strength

## GRAJEN BAG: A STYLISH NATURAL BAG FROM WOOD CUTTING WASTE

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## **ABSTRACT**

Grajen is a Javanese language for wood cutting waste. This waste is in the form of wood powder which can be found in the furniture industry. Grajen is often used as a medium for cultivation of mushrooms. In addition, grajen is used as a base of the cage for hamsters and horses. Nowadays, due to a rapid development of creative fashion industries, grajen can be processed to create a best-selling product of fashion industries. The texture of grajen that resembles powder can be easily combined with sewing materials, including bag. The new innovation of Grajen Bag is the result of grajen which is processed in the form of bag. In this product, grajen powder becomes the main ingredient for making the bag. Grajen powder would be attached to the bag foam which then formed in a fine stitch. Finally, the bag would be coated with mica as the outermost layer of the bag. The natural and stylish look of grajen makes the Grajen Bag has its own uniqueness and high artistic value in the fashion world. The production budget of a Grajen Bag is also relatively cheap for such high selling value product. Besides, the waste from wood is not wasted anymore.

Keywords: bag, fashion, natural, waste, stylish

## ISOLABOARD: UTILISATION OF PAPER WASTE TO BE ISOLATOR AND ANTI RADIATION

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## **ABSTRACT**

As widely known, paper waste can be recycled into many useful products. This project aims at producing Isolaboard which is useful for preventing the laptop user from the danger of computer radiation as well as providing more environmentally friendly cooler pad. This project will utilize the waste of paper from the students of Ki Ageng Giring Boarding House (PPKAG). The steps of production are first, tearing off the paper into small pieces. Second, mixing it with PVC glue, then print. Third, coloring it from the extract of teak leaf with the batik motive of Mega Mendung. Through Isolaboard, all students' paper waste can be recycled into a more useful product which can support modern activity such as working with laptop. Besides, the problems of paper waste at the students' boarding house can be resolved.

Keywords: recycle, ISOLABOARD, radiation, waste, paper

## MAUAIR: A BOTTLE FOR PREVENTING HUMAN DEHYDRATION

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## **ABSTRACT**

As a human being, it is required to have sufficient drinking water regularly. However, it sometimes neglected because of the lack of public awareness on the required minimum consumption of drinking water and the people busyness. In response to that condition, a bottle for preventing human dehydration would help us meet the need of sufficient drinking water. The bottle which called "Mauair" is designed as a bottle to warm and remind the need of drinking water. It can be set every few hours as a reminder time when to drink. In addition, warmer in "Mauair" can facilitate those who need to drink water in warm condition. An alarm system is also put to remind people to drink at certain times. The warmer is added because humans are encouraged to drink warm water when starting an activity. It also can facilitate people who have stomach disorders such as ulcer to drink warm water before eating. "Mauair" is friendly designed so that it is easy to carry. People also do not have to bother to look for warm water. "Mauair" is expected to be a reminder for people who often forget to drink and a bottle for people who have problems related to the stomach.

Keywords: Drink, Bottle, Alarm, Warmer, Dehydration

## SUJIMAN: THE UTILIZATION OF MANGO SEEDS WASTE AS AN ALTERNATIVE FOR CEREAL MILK

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### **ABSTRACT**

Cereal milk is one source of protein for our balance nutrition. It is because this white drink with chips oats has a complete nutritional content compared to other beverages. So, cereal milk has many benefits to body health. The habit of drinking cereal milk is already common to many people, ranging from small children to the young and old. SUJIMAN is a cereal milk product that utilizes seed waste as the main raw material, specifically the mango seeds. Indonesia is facing problems in processing the waste, including organic waste. SUJIMAN is a new innovation for processing a seed waste into useful and healthy product. SUJIMAN can also be developed as a business as well as a manifestation in overcoming the existing waste problems in Indonesia. SUJIMAN can be produced in a domestic scale with simple materials and cultivation. This product also has many benefits with good nutritional value and can be used as an alternative process of cereal milk either from cow's milk or soy milk.

Keywords: Mango seeds, cereal milk, waste

# A&D-VINECA: APPLE OR DATE VINEGAR-CENTELLA ASIATICA (PEGAGA) POWDER WITH ARABIC GUM (A&D-VINECA)

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### **ABSTRACT**

A&D-VineCA: Apple or Date Vinegar-Centella asiatica powder with arabic gum (A&D-VineCA) are powdered extracts made with premium apple or date vinegars added with pegaga (Centella asiatica) and arabic gum (Acasia senegal) that can be used to promote overall healthy living. Vinegar was claimed to treat various diseases such as parasite infection, nausea and protects the heart. It is also claimed that vinegar could lower the blood pressure and improved symptoms of diabetes. Arabic gum also known as Al-Mann was also used in sunnah medicine as gentle laxative and tonic. Apart from wound healing, pegaga is recommended for the treatment of various skin conditions such as eczema and also used for relieving anxiety and improving cognition. We combined these three ingredients and developed a method to convert them into powder to obtain A&D-VineCA. A&D-VineCA powder provides acceptable flavor, color and aroma that can be used for various applications without the mess associated with liquid apple or dates vinegar. A&D-VineCA were also found to possess neuroprotective properties.

## **RECA PREMIUM**

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### **ABSTRACT**

RECA PREMIUM - a powdered extract formulated from standardized extract of *Centella asiatica* (RECA) with arabic gum (*Acasia senegal*) and maltodextrin. *C.asiatica* or locally known as pegaga is a psychoactive medicinal which has been used for centuries in Ayurvedic and Chinese traditional medicines for memory improvement, treatment of mental fatigue, wound healing, asthma and toxic fever. Distinguished by its perennial, herbaceous creeper with kidney shaped leaves, *C.asiatica* is reputed to have remarkable health and medicinal benefits; owing to its pentacyclic triterpenes. The anti-inflammatory effect of RECA PREMIUM was investigated. Results showed decreases in nitric oxide production, a marker for inflammation that, when elevated, is associated with high for cardiovascular disease. Additionally, it also has tremendous anti-oxidant potentials by lowering the production of reactive oxygen species (ROS). Interestingly, these results are also parallel with the laboratory animal study in which RECA PREMIUM was found to possess neuroprotective and anti-acetylcholinesterase properties. In view of these results, the potential application of RECA PREMIUM in food and pharmaceutical industries is now widely open.

**Keywords:** RECA Premium; *C.asiatica*; anti-inflammatory; anti-oxidant; anti-acetylcholinesterase; neuroprotective