



## **Conference Proceedings**

**5th ICSTR Bangkok – International Conference on Science & Technology  
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## **CONFERENCE VENUE**

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## **KEYNOTE SPEAKER**



**Assoc. Prof. Dr. Suparman**

**Assoc. Professor of Applied Mathematics, Ahmad Dahlan  
University, Yogyakarta, Indonesia**

**Topic: Mathematical modeling using reversible jump Markov Chain  
Monte Carlo**

**Suparman is the Assoc. Professor of Applied Mathematics at the Graduate Program, Ahmad Dahlan University, Indonesia. He earned his B.S. in Mathematics Education from Lampung University (Indonesia), M.Sc. in Mathematics from Gadjah Mada University (Indonesia), and D.E.A. and Ph.D. in Applied Mathematics from Paul Sabatier (France). He is the head of the Mathematics Education Study Program, Graduate Program, Ahmad Dahlan University.**

## PRESENTERS



Hwa Soo Kim  
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**Development of Simulated Cyber Security Education and Training System Based on Virtualization Using Cloud**

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### **Abstract**

We developed a virtualization-based cyber security simulation training system using Cloud (registered trademark with CyberAegis) that can effectively and efficiently cope with increasing hacking crimes in recent years. CyberAegis is a system that can practice hacking attack and defense training using Cloud in KOREA for the first time. Also, CyberAegis acquired the first level of GS certificate (the highest) from the Korea Information and Communications Technology Association in 2019.

The motivations and objectives of the development of simulated cyber security education and training system based on virtualization using cloud system are as follows: (i) cyber attacking by individuals or hackers have spread to the criminal, terrorist groups, and even the state level, and the extent of the damage is serious due to the advancement of attack methods and the expansion of the threat scale, (ii) in order to guarantee safe activities in cyberspace, like saying 'prepare for war if you want peace', make sure that no one can invade my territory, but if infringed, they will be able to implement measures in the shortest time to minimize damage, (iii) we can educate and train the trainees about cyber security efficiently and effectively using CyberAegis system.

The environment and structure of the CyberAegis system are as follows: (i) it is a simulation training system to master the theoretical education about the countermeasures against cyber infringement and the ability to respond under situations similar to actual information systems., (ii) it contains a sophisticated educational environment, systematic training procedures, and intensive training contents, (iii) it contains a platform that can take advantage of hacking techniques that are evolving day by day, (iv) it also gives trainee the opportunity to experience cyber warfare in real-time in a realistic virtual environment.

The application of the cyber security simulation education and training system are as follow: (i) respond to cyber infringement is primarily required for those who use information systems in the military, public institutions, educational institutions, medical institutions, companies, and who produce, store, operate, and protect information assets, (ii) it is also necessary for elementary, middle, high school, university students and workers who want to contribute to the safety of cyber threats in the cyber space during the Forth Industrial Revolution Era.

We recognized the superiority of its products after the development of CyberAegis, and developed content related to the cyber operation command, the army, navy and air force's cyber-infringement countermeasures, and the cyber training center contents development project of the Korea Internet and Security Agency (KISA). We participate in many research projects related to business innovation and security in the cyber sector of government and public institutions. Part of the CyberAegis was supported and cooperated by Korea Ministry of Small, Medium, Enterprises and Startups (MSS) and Korea Internet and Security Agency (KISA) for R/D expenses. We thank our colleagues from Korea MSS and KISA who provided insight and expertise that greatly assisted the paper.

**Keywords:** Cyberaegis; Cyber Security; Virtualization-Based Cyber Security Simulation Training System; Cloud Ystem; GS Certificate; Application Of The Cyber Security Training System

HWA SOO KIM  
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**Technical Management Strategies for Project Managers of Information System Projects**

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**Abstract**

The technical management strategies for project managers to effectively and efficiently manage information system projects are very complicated and important. Thus, it is necessary to do technical management strategies for managing information system projects efficiently and effectively. However, it is difficult to find know-how of technical strategies for project manager of the information system projects. The paper is to give know-how to the project manager about the technical project management strategies during project management in information systems. There are several technical management strategies such as cost management, communication management, human resource management, quality management, risk management, scope management, and time management or schedule management in the technical project management. The paper presents the important activities and missions to be conducted by the project managers in the technical project management for information system projects. The paper also presents project manager's qualifications such as 21c leaderships, confidence, creative thinking, personality, strong human network, foreign languages, engineering knowledges, problem solving techniques, presentation skill, strong background and experience, etc. Therefore, the project manager should be a smart person like walking dictionary. The expected results and contributions of this paper are as follows; (i) it is possible to be a cost-effective and reasonable project management in information system, (ii) this paper can be used as the basis for technical project management when we do project management in information systems., (iii) this paper will be able to use efficiently and effectively to project management the information systems, (v) this paper can be managed of low-cost, high performance information systems by elimination the major errors.

**Adebanjo Adetayo  
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ERCICSTR1928052**

**Effects of Synchronous Radio Broadcast on Undergraduates Achievement in Basic Computer Operations in National Open University of Nigeria**

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**Abstract**

Basic Computer Operations is taught to open and distance learners to equip them with basic characteristics of information, need for good organisation of information and the fundamental concepts of storage and retrieval. However, National Open University students' knowledge and attitude to basic computer operations in Nigeria is not encouraging. Previous studies focused largely on face to face facilitation that could not engage all the students' with little consideration for intervention through synchronous broadcast that give equal opportunity for facilitation. This study examined the effects of Synchronous Radio Broadcast (SYB) on undergraduates' achievement in Basic Computer Operations in National Open University of Nigeria. The study adopted pretest-posttest control group quasi-experimental design. Two National Open University study centres (Ibadan and Lagos) were randomly selected from Southwestern Nigeria. Two hundred and twenty-two of 100 level degree

	<p>programmes were enumerated and participated in the study. The intact classes were randomly assigned to SYB (n=98) and conventional (n=124) instructional delivery modes. Instruments used were Students' basic computer operations achievement test (<math>r=0.74</math>) and instructional guides for the two groups. The results of the study shows that treatment had a significant main effect on students' achievement in basic computer operations (<math>F(2, 219)= 44.71</math>; partial <math>\eta^2 =98</math>). Students in SYR obtained higher achievement mean score (23.92) compared with the control groups (12.21) .Therefore, Synchronous radio presentation is effective in enhancing undergraduates' achievement in Basic computer operations in National Open University of Nigeria. It was therefore, recommended that distance learners' facilitators should adopt synchronous radio presentation for their instructional delivery.</p> <p><b>Keywords:</b> Synchronous Radio Broadcast, Achievement In Basic Computer Operations, Undergraduate</p>
<p><b>YuspianGunawan ERCICSTR1928053</b></p>	<p><b>Heat Rate System Analysis In The Steam Power Plant In Niitanasa Using Environmentally Friendly Low-Calorie Fuels</b></p> <p><b>La Hasanudin</b> Mechanical Enggineering Halu Oleo Universit, Kendari, Indonesia</p> <p><b>YuspianGunawan</b> Mechanical Enggineering Halu Oleo Universit, Kendari, Indonesia</p> <p><b>Salimin</b> Mechanical Enggineering Halu Oleo Universit, Kendari, Indonesia</p> <p><b>Kadir</b> Mechanical Enggineering Halu Oleo Universit, Kendari, Indonesia</p> <p><b>Samhuddin</b> Mechanical Enggineering Halu Oleo Universit, Kendari, Indonesia</p> <p><b>AgustinusLolok</b> Electrical Engineering Halu Oleo Universit, Kendari, Indonesia</p> <p><b>Abstract</b> The heat rate in a steam power plant is very important to know because it involves the amount of energy supply needed to produce electricity. This is done to determine the heat energy input from fuel needed in an electric energy. The purpose of this research is to analyze the heat rate needed in a steam power plant. The method used is the direct method, the required input is Gross kWh, Net kWh, coal fuel use, calorific value of the fuel. The type of fuel used is low calorie type of lignite. The results of the Gross Heat rate in January were seen 4,323.98 kcal / kWh while the Net Heat rate was 5,010.97 kcal / kWh. In December the Gross Heat rate was 4,141.72 kcal / kWh while the Net Heat rate was 4,992.96 kcal / kWh. This value is relatively high at a capacity of MW 100 MW.</p> <p><b>Keywords:</b> Heat Rate, Coal, Steam, Electric, Fuel</p>
<p><b>Muhammad Fikri Al Habib ERCICSTR1928054</b></p>	<p><b>Identification of CD1B Gen Polimorfism in Sentul Terseleksi (Sensi-1) Chicken and IPB D1 Chicken Using Sequencing Method</b></p> <p><b>Muhammad Fikri Al Habib</b> Faculty of Animal Science, IPB University, Bogor, Indonesia</p> <p><b>Apip Nurdin</b></p> <p><b>Asih Desi Sartika</b></p> <p><b>Mukti Teguh Wijaya</b></p> <p><b>Yuda Surya Prakoso</b></p> <p><b>Abstract</b></p>

Indonesian local chickens have good genetic potential for resistance to several diseases that often attack birds. The resistance of chickens (immunity) to diseases is influenced by antibodies. Yolk immunoglobulin (IgY) is a maternal antibody found in eggs and blood serum that can fight pathogenic infections. The concentration of Yolk Immunoglobulin (IgY) in chickens is controlled by the CD1B gene. Using the GWAS analysis method, the gene is thought to have a single nucleotide polymorphism (SNP) at position c.6471A> T, the SNP code Gga\_rs16057130. This study was conducted to identify the genetic diversity of the CD1b gene that controls the concentration of immunoglobulin Yolk (IgY) in IPB D1 chickens and Sentul terseleksi (Sensi-1) chickens. Forward and reverse primers are designed based on GenBank: NM\_001024582 using the Primary 3 program, Multiple Primary Analyzer and Primary Stat. Sequencing data analysis using BLAST, FinchTV, and MEGA7 programs. The results of the study found 5 SNPs of exon 3 CD1B genes in IPB D1 chickens and Sentul terseleksi (Sensi-1) chickens, namely at base position c.292 T> C, c.429 G> A, c.441 T> A, c.467 A> G, c. 491 C> G. The combination of 5 SNPs forms 12 diplotypes. Transition mutations at base position c.292, are synonymous mutations without changing the amino acid Leucine. Non synonymous mutation occurs at four mutation points, namely at base c.429, amino acids change from Valine to Aspartic acid, base mutations c.441 undergoes amino acids from serine to threonine, base mutations c.467 undergoes changes in Threonine amino acids to Alanine, and base c.491 mutations undergo changes in amino acids from arginine to glycine. Mutations in bases c.292 and c.441 were polymorphic in Sentul terseleksi (Sensi-1) chickens and were monomorphic in IPB D1 chickens. Mutations in bases c.429, c.467, and c.491 were monomorphic in IPB D1 chickens and Sentul terseleksi (Sensi-1) chicken.  
**Keywords:** Local Chicken, CD1B gene, Immunity, Immunoglobulin Yolk (IgY), SNPs

Yi-Lung Yeh  
ERCICSTR1928057

Effects of groundwater resources in Pingtung Plain, Taiwan, by typhoon disaster based on cloud theory

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Abstract

On August 7, 2009, medium-strength typhoon Morakot landed on Taiwan in Hualian County. The typhoon caused severe flooding and landslide disasters in southern and eastern Taiwan because of long-duration and high-intensity precipitation. The typhoon lasted a total of 107 hours and recorded the largest rainfall duration in Taiwan. Moreover, the maximum hourly rainfall reached 123 mm/hr at Alishan station during the typhoon period. The consequence of the catastrophe including 619 deaths, 76 missing persons, the temporary evacuation of 24,950 residents, and more than US\$ 5 billion in economic losses. According to the investigation by Forestry Bureau, Council of Agriculture, Taiwan showed that the landslide areas reached 34,757 hectares, and most kerfs of the tree trunks were broken or ripped tree fiber structure. The phenomenon showed the trees destroyed by the direct collapse of the landslide. The water resources conservation ability in the forest reduced due to the large-scale landslide on the upper catchment. Besides, the landslide soil flowed into the river and sediment in the riverbed and decreased the water recharge from the river into groundwater. All the results decreased the groundwater resources in this area.

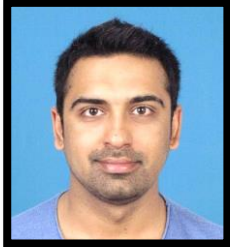
The Pingtung Plain located in the south of Taiwan and mainly includes three basins that is Gaoping River, Donggang River, and Linbian River. This paper collected monthly mean groundwater level data for each basin for before and after 2009. Cloud theory was used to analyze the characteristics varies of the groundwater level in the Pingtung Plain caused by the impact of Typhoon Morakot. The results



showed that the expected values decreased in the upper and middle fan areas, and increased in distal fan area after Typhoon Morakot. The entropy of the monthly average groundwater level increased after the typhoon Morakot in the upper fan area and mostly decreased after the Morakot typhoon in the middle and distal fan areas. The results indicated that the groundwater level variation in the upper fan area was more sensitive after the Typhoon Morakot.

**Keywords:** Typhoon Morakot, Groundwater resources, Pingtung Plain, Cloud theory, Uncertainty.

**Acknowledgements:** This research was financially supported by the Ministry of Science and Technology, R.O.C. (MOST 107-2119-M-008-019)



**Abrar Ahmed**  
ERCICSTR1928061

**Formulation and Characterization of Poly-herbal Cream; Probing Anti-Melasma Potential**

**Abrar Ahmed**

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**Abstract**

Melasma is acquired chronic recurrent hyper pigmentary disorder characterized by symmetrically distributed hyper pigmented patches. It is characteristic pattern of facial hyperpigmentation which is usually marginated, mask like distribution that occurs on the cheeks, forehead, and chin Objective: Multiple treatment strategies include hydroquinone, azelaic acid, kojic acid, retinoids, topical steroids, glycolic acid, mequinol, arbutin. The most well-known combination contains hydroquinone, which is a topical steroid, and retinoic acid. However its prolonged usage may lead to untoward effects like depigmentation and exogenous ochronosis. Azelaic acid inhibits DNA synthesis and mitochondrial enzymes, thereby producing direct cytotoxic effects toward the abnormal melanocyte. The journey for the search of safer alternative results in the development of potential poly-herbal preparation for melasma with other potential effects. Main objective of the project is to provide safer and effective formulation to the patient with melasma or hyper pigmentation, with minimum side effects. Also characterizing the dosage form and examining its clinical sufficiency. Methodology: This research is aimed to formulate stable water in oil (w/o) cream by using ethanolic extracts of Glycyrrhiza glabra 2% , Aloe vera 4% , Allium cepa 1%, Citrus limon1% as active component of the formulation. Base material is free from other active ingredient. Peppermint oil and rose oil is added for fragrance. It is tested on the basis of organoleptic properties, pH, viscosity, conductivity. Rheological properties of placebo formulation and final formulation showed that viscosity was increased by the addition of active ingredients. Results and Discussion: Formulation showed no irritancy on albino mice in patch test. Open label single arm study is done on human volunteers with N=35 participants. 57% participants had melasma pigmentation all over the face which showed better results within 4 weeks. 14% as excellent and 51% marked it as a good product. However 82% participants have no adverse reaction. Hence it can be concluded that it is safe and effective formulation.

**Keywords:** Melasma, pigmentation, poly-herbal, Glycyrrhiza glabra, Aloe vera, Allium cepa, Citrus

**Pradip Peter Dey**  
ERCICSTR1928063

**Guidelines for Software Design Practices**

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**Abstract**

Design is one of the most creative tasks in developing software systems. Designers are responsible for making all major decisions. Many modeling aspects including analytical, structural, behavioral, intuitive, algorithmic, artistic, technical, graphical, cognitive, mathematical, psychological and programming models need to be considered in the development process of an effective design especially for complex systems because software complexity needs to be addressed through design. Software designers are required to be involved directly or indirectly in all major software development

activities. This paper critically reviews past practices in software design and presents a set of guidelines for achieving creative solutions to the software design problems. It also suggests how design representations can be improved by extending current practices.

**Keywords:** Behavioral Models, Cognitive Load, Complexity, Iterative Process, User Experience



**Inchan Park**  
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**Omni-channel Fashion Shopping Service Business Model for Promotion of Small Fashion Retail**

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**Abstract**

This study attempted to seek out a business model which could restore small fashion businesses which have been forced out to the outskirts because of gentrification. In the Republic of Korea, there used to be many fashion streets along which small retail fashion stores were clustered. Right now, however, it is hard to find the traces of such small retail fashion stores. This study has searched for diverse ideas on the services which can help people find a small retail fashion store, and the results found three plans: i) To launch a channel to attract people who are interested in fashion, ii) to develop a mobile device-based service which is familiar to young users, iii) to utilize media which appeal to young people. Consequently, this study selected virtual fitting as such an interesting medium and proposed an omni-channel fashion shopping service business model which connects both offline (virtual fitting booth) and mobile (fitting experience & purchase support app) channels. This service provides the latest fashion shopping information and high-quality fashion curating service. In addition, it would offer a new communication channel with customers to small retail fashion stores and boost small fashion business.

**Keywords:** Omni-Channel, Immersive VR, Virtual Fitting, Fashion Curating, Service Design

**Md. Abduz Zaher**  
ERCICSTR1928058

**Gender Variances of Dietary Behavior among Elderly People Admitted in a Renowned Hospital, Bangladesh**

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**Abstract**

Dietary habit and diversification plays an important role for the betterment of geriatric nutrition which ensures quality of life and delay of degenerative diseases among the elderly. Therefore, a descriptive cross sectional study was carried out among 85 elderly individuals, who were randomly selected from Bangabandhu Sheikh Mujib Medical University, Dhaka during the mid of June 2019 with an aim to observe dietary diversification. Frequency of food intake and food preferences were

varied between male and female. The consumption frequency of small fish, egg and milk was >3 times per week, which was significantly ( $p<0.05$ ) different in gender variations. The consumption of citrus fruits, colored fruits and vegetables by the elderly of more than 3 times were 6, 12 and 53% respectively in male, but in female it was 8, 18 and 63% respectively. Animal food items were more preferable in both respondents compared to vegetables. The preferences of foods mainly depends on their taste and food prices. Knowledge about food or nutritive value was very poor, only 39% was aware of it. The working place and load of work significantly affects the nutritional status of the elderly people. More undernutrition was observed in female (40%) compared to male (27%), as male were engaged with different outside activities at this stage while the female were engaged with little household activities in some cases. But, it was perceived that both male and female feel lonely at their maximum time. Therefore, it is the best time to take proper necessary steps to develop elderly friendly working and home environment for the betterment of geriatric nutrition at the highest policy level.  
**Keywords:** Gender Variances, Dietary Diversification, Working Environment, Elderly People

A.K. Obidul Huq  
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**Formulation of Moringa-based Nutritive Biscuits for Pregnant Mother**

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**Abstract**

The study was designed to formulate a Moringa-based nutritive biscuits that contains sufficient amount of nutrients for the pregnant mother and the major goal was to improve the blood hemoglobin level for them. This investigation was carried out in two phases. In first phase, highly nutrient dense biscuit was developed by incorporating dry Moringa (*Moringa oleifera*) leaf powder, wheat flour, flaxseed, sesame seed, raisins and other necessary ingredients. This recipe was standardized and evaluated for organoleptic acceptability using nine point hedonic scale by the 15 pregnant mother. The overall acceptability score was 7.8 out of 9 (Like very much). The nutritive value of one serving (3 pieces = 30g) Moringa-based biscuits contain protein 4.9g, fat 2.6g, carbohydrate 18.6g, fiber 1.2g and energy 120 Kcal. In second phase, after taking verbal consent 15 pregnant mothers were voluntarily enrolled for a trail to observe the effect of Moringa-based biscuits on blood hemoglobin (Hb) level. Daily two servings (60g) newly developed biscuits were supplemented to all individual and measured Hb level at day 0, 30 and 60. At day 0, the Hb level was  $9.71 \pm 0.46$  mg/dl, at day 30 it was moderately improved ( $10.14 \pm 0.43$  mg/dl) and finally, at day 60, it became  $10.68 \pm 0.41$  mg/dl. Therefore, consumption of Moringa-based nutrient dense biscuits showed a significant ( $p<0.05$ ) improvement of blood hemoglobin level after 2 months supplementation.

**Keywords:** Moringa-Based Nutritive Biscuits, Pregnant Mother, Hemoglobin Level, Hedonic Scale

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