

ICCST2016



UMS
UNIVERSITI MALAYSIA SABAH

The 3rd International Conference on Computational Science and Technology 2016



28th – 30th November 2016
Kota Kinabalu, Malaysia
www.iccstec.org

ICCST2016 Conference Venue : The Magellan Sutera, Jalan Utama Sutera Harbour, Sutera Harbour Boulevard, 88100 Kota Kinabalu, Sabah, Malaysia, Phone: (60) 8831 2222

Tentative ICCST2016 Conference Program

28th November 2016

- 08:00 Registration
- 09:00 Workshops
- 12:00 Payable Tours (Optional)

29th November 2016

- 08:00 Registration (Cont)
- 08:30 Opening Ceremony
- 09:00 Keynote Speech 1
Speaker: Professor Jooyoung Lee,
Title: Global Optimization by Conformational Space Annealing and its Application)
- 09:45 Keynote Speech 2
Speaker: Professor Hiroyuki Iida
Title: Game Theory, Game Refinement Theory and Gamification
- 10:30 Coffee Break
- 10:45 Parallel Sessions A, B, C
- 12:45 Lunch
- 14:00 Parallel Sessions E1, F1, G1
- 15:30 Coffee Break
- 15:45 Parallel Sessions E2, F2, G2
- 17:45 Adjourn
- 19:00 Conference Dinner

30th November 2016

- 08:00 Registration (Cont)
- 09:00 Keynote Speech 3
Speaker: Professor Ali Selamat
Title:
- 09:45 Keynote Speech 4
Speaker: Professor Yong-Jin Park
Title: Information-Centric Networking for Future Internet Architecture
- 10:30 Coffee Break
- 10:45 Parallel Sessions D, I, K
- 12:45 Lunch
- 14:00 Parallel Sessions H1, J1, L1
- 15:30 Coffee Break
- 15:45 Parallel Sessions H2, J2
- 18:00 Closing Ceremony and Awards Presentation

**PARALLEL SESSION A
(KNOWLEDGE DISCOVERY AND MACHINE LEARNING 1)
SESSION CHAIR: DR. NOR BADRUL ANUAR**

TIME	PID	AUTHORS	TITLE
10:45 – 11:00	006	Ali Feizollah, Nor Badrul Anuar , Rosli Salleh	Evaluation of Network Traffic Analysis Using Fuzzy C-Means Clustering Algorithm in Mobile Malware Detection
11:00 – 11:15	007	Harnani Mat Zin , Norwati Mustapha, Masrah Azrifah Azmi Murad, Nurfadhlina Mohd Sharef	Term Weighting Scheme Effect in Sentiment Analysis of Online Movie Reviews
11:15 – 11:30	127	Nurul Hidayah Mat Zain , Mohd Harith Hashim, Aslina Baharum, Ismassabah Ismail, Rahayu Abdul Aziz, Anita Mohd Yasin	Evaluating Player Enjoyment in Mobile Games
11:30 – 11:45	016	Koh Che Hun and Busyairah Syd Ali	Multisensor Surveillance Data Correlation Algorithm
11:45 – 12:00	023	Erdefi Rakun , Aniati M. Arymurthy, Lim Y. Stefanus, Alfian F. Wicaksono, I Wayan W. Wisesa	Recognition of Sign Language System for Indonesian Language using Long Short-Term Memory Neural Networks
12:00 – 12:15	024	Zuraini Othman , Azizi Abdullah, Anton Satria Prabuwo	Supervised Growing Approach for Region of Interest Detection in Iris Localisation
12:15 – 12:30	029	Raima Hassim , Hamzah Asyrani Sulaiman and Abdullah Bade	An Efficient Rain Streaks Detection and Removal for Single Image Using Hybridization of Rain Detection and Rain Removal Technique (HyDRA)
12:30 – 12:45	031	Jamil Lahani , Rajesh Kumar Muniandy, Abdullah Bade	A Robust Technique for Edge Detection Using Integration of Entropy Threshold – Canny (InTEC)

**LUNCH
12:45 – 14:00**

**PARALLEL SESSION E1
(NETWORKING AND INFORMATION SECURITY)
SESSION CHAIR: DR. DAHLILA PUTRI DAHNIL**

TIME	PID	AUTHORS	TITLE
14:00 – 14:15	009	Akhyari Nasir , Ruzaini Abdullah Arshah	Information Security Culture Dimensions in Information Security Policy Compliance Study: A Review
14:15 – 14:30	019	Lee Jue Min, Lim Yong Hao, Ng Huey Wen, Tan Soon Guan, Yean Li Ho , Afizan Azman, Lau Siong Hoe	Comparison of Graphical Passwords Using ISO 9126
14:30 – 14:45	058	Dahlila Putri Dahnil and Rosilah Hassan	Wireless Sensor Networks: A Framework for Community and Educational Gardens
14:45 – 15:00	081	S.A. Mohamad Rofie , I. Ramli, K.N. Redzwan, S.M. Mohd Hassan and M.S.B. Ibrahim	OpenFlow based Load Balancing for Software-Defined Network Applications
15:00 – 15:15	091	Nur Arzilawati Md Yunus , Mohamed Othman, Zurina Mohd Hanapi, Kweh Yeah Lun	Number of Stage Implication towards Multistage Interconnection Network Reliability
15:15 – 15:30	041	Paneer Mala Nadarajah and Nazatul Aini Abd Majid	Mobile App Development using Cloud-based Platforms

**BREAK
15:30 – 15:45**

**PARALLEL SESSION E2
(ARTIFICIAL INTELLIGENCE)
SESSION CHAIR: DR. RABIAH ABDUL KADIR**

15:45 – 16:00	010	Nurnadiah Zamri , Syibrah Naim, Lazim Abdullah, Binyamin Yusoff	An Introduction to Z-Numbers with Interval Type-2 Fuzzy TOPSIS
16:00 – 16:15	082	Ong Sing Goh, Yogan Jaya Kumar, Pui Huang Leong	Natural Language Query Approach for Embodied Conversational Agent
16:15 – 16:30	020	A'Qilah Ahmad Dahalan , Azali Saudi, Jumat Sulaiman and Wan Rozita Wan Din	Robot Navigation In Static Indoor Environment via Accelerated Iterative Method
16:30 – 16:45	030	Nur Farhana Faisal , Sarudin Kari, Abdullah Bade	A Survey on Haze Removal Techniques in Computer Vision and Graphics Application
16:45 – 17:00	033	Mohd Faazie Darmawan , Haswadi Hasan, Suriati Sadimon, Suhaila Mohamad Yusuf, Habibollah Haron	A Hybrid Artificial Intelligent System for Age Estimation Based on Length of Left Hand Bone
17:00 – 17:15	042	Rabiah Abdul Kadir , Azlina Ahmad, Ali Marstawi	Transformation of Text-to-3D Graphics

PARALLEL SESSION B (KNOWLEDGE DISCOVERY AND MACHINE LEARNING 2) SESSION CHAIR: DR. MOHD HANAFI AHMAD HIJAZI / DR. A.F.M. SAIFUDDIN SAIF			
TIME	PID	AUTHORS	TITLE
10:45 – 11:00	013	A.F.M. Saifuddin Saif, Zainal Rasyid Mahayuddin	Moving Object Segmentation Using Various Features from Aerial Images: A Review
11:00 – 11:15	032	Mohamad Hazim Md Hanif, Kayode Sakariyah Adewole, Nor Badrul Anuar, Amirrudin Kamsin	Performance evaluation of machine learning algorithms for spam profile detection on Twitter using WEKA and RapidMiner
11:15 – 11:30	065	M.N.Shah Zainudin, Md. Nasir Sulaiman, Norwati Mustapha, Thinagaran Perumal, Azree Shahrel Ahmad Nazri	Hybrid Relief-f Differential Evolution Feature Selection for Accelerometer Actions
11:30 – 11:45	044	HuiKeng Lau, JiaWoei Chang, Norhayati Daut, Asni Tahir, Erdah Samino, M.H.A. Hijazi	Exploring Edge-Based Segmentation Towards Automated Skin Lesion Diagnosis
11:45 – 12:00	046	Ummi Raba'ah Hashim, Siti Zaiton Mohd Hashim, Azah Kamilah Muda, Kasturi Kanchymalay, Intan Ermahani A. Jalil, Aznah Nor Anuar, Muhammad Hakim Othman	Extraction and Exploratory Analysis of Texture Features on Images of Timber Defect
12:00 – 12:15	051	O. M. Akash, Sharifah Sakinah Binti Syed Ahmad, Mohd Sanusi Bin Azmi	A new similarity measure based Affinity propagation for data clustering
12:15 – 12:30	066	Mohd Hanafi Ahmad Hijazi, Tan Choon Beng, James Mountstephens, Yuto Lim, Kashif Nisar	Malware Classification Using Ensemble Classifiers
12:30 – 12:45	011	Puteri N E Nohuddin, Zuraini Zainol, Mohamad Abu Ubaidah Amir	Trend Cluster Analysis of Wave Data for Renewable Energy
LUNCH 12:45 – 14:00			
PARALLEL SESSION F1 (KNOWLEDGE MANAGEMENT AND SOFTWARE COMPUTING) SESSION CHAIR: DR. ALIZA SARLAN			
TIME	PID	AUTHORS	TITLE
14:00 – 14:15	012	Fateen Alkhred, Puteri N E Nohuddin, Zuraini Zainol, Omar Zakaria, Sharifah Fateen Syuhada Syed Lokman	Sharing Explicit Knowledge: Designing a Peacekeeping Operation Databank
14:15 – 14:30	017	Siti Azreena Mubin, Azrul Hazri Jantan, Rusli Abdullah, Azrina Kamaruddin	UEWDM User Interface Design: A Case Study of i-GIMS
14:30 – 14:45	021	Wan Fatimah Wan Ahmad, Aliza Sarlan, Fathin Suraya Jainlabdin	The Retelling of Malaysian Folktales: CERITERA
14:45 – 15:00	022	Zhamri Che Ani, Shuib Basri and Aliza Sarlan	A Framework for Designing UCP-Based Effort Estimation
15:00 – 15:15	025	Ling Sing Angeline Lee, Siti Shukhaila Shaharuddin, Giap Weng Ng and Syaryfah Fazidawaty Wan Busrah	An Investigation on the Usability of Mobile Travel Guide Application: A Comparison Study
15:15 – 15:30	026	Ling Sing Angeline Lee, Giap Weng Ng, Khe Yi Tan, Siti Shukhaila Shaharuddin and Syaryfah Fazidawaty Wan Busrah	Integrating Interactive Multimedia Objects in Mobile Augmented Reality for Sarawak Tourism
BREAK 15:30 – 15:45			
PARALLEL SESSION F2 (KNOWLEDGE DISCOVERY AND MACHINE LEARNING 3) SESSION CHAIR: DR. YOGAN JAYA KUMAR			
15:45 – 16:00	083	Haviluddin Haviluddin and Rayner Alfred	Short-Term Time Series Modelling Forecasting Using Genetic Algorithm
16:00 – 16:15	047	Tanisha Thasa Ratha Rajah, Yin Kia Chiam, Zati Azizul	Fuzzy-based Framework for the Selection of Image Processing Software for Diagnosis and Outcome Prediction of Cardiac Diseases
16:15 – 16:30	080	Muhammad Azhari, Yogan Jaya Kumar, Ong Sing Goh, Hea Choon Ngo	Automatic Text Summarization: Soft Computing Based Approaches
16:30 – 16:45	055	Nur Hainani Othman, Lee Yoot Khuan, Afaf Rozan Mohd Radzol, Wahidah Mansor	Detection of NS1 from SERS Spectra of Adulterated Saliva Using ANN
16:45 – 17:00	056	Wee Lorn Jhinn, Michael Goh Kah Ong, Lau Siong Hoe, Tee Connie	A Contactless Rotation-Invariant Palm Vein Recognition System
17:00 – 17:15	064	Nung Kion Lee and Sina Nazeri	Ensemble Prediction of Enhancers Associated Marks Using K-mer Feature

PARALLEL SESSION C (KNOWLEDGE MANAGEMENT AND SOFTWARE COMPUTING 2) SESSION CHAIR: DR. ASLINA BAHARUM			
TIME	PID	AUTHORS	TITLE
10:45 – 11:00	027	Nor Hazleza Mohamad , Mahsa Shabani, Peter Charles Woods	Competitive Intelligence Awareness in Creative Multimedia Industry in Malaysia
11:00 – 11:15	035	Benz Kek Yeo Chuen , Tee Connie, Ong Thian Song, Michael Kah Ong Goh	Partial Least Squares-based Incremental PCA for Robust Human Detection and Tracking
11:15 – 11:30	038	Abdullahi Abubakar Imam , Shuib Basri, Rohiza Ahmad	Data Extraction Formulation for Efficient Data Synchronization between Mobile Databases and Server-side Database
11:30 – 11:45	040	Farzana Kabir Ahmad , Siti Sakira Kamaruddin, Yuhanis Yusof, and Nooraini Yusoff	Synergy Network Inference Model Based on Heterogeneous Data Integration
11:45 – 12:00	043	Mohammad Rustom Al Nasar, Masnizah Mohd , Nazlena Mohamad Ali	Personal Information Management: Evaluation of the PHOTO REFINDER System
12:00 – 12:15	045	Ching FeiYau, Nasuha Lee Abdullah , Rosnah Idrus	Managing Complexity: Online Supervisor Matching Service (O-SMS) for Research Postgraduate Students in Malaysia
12:15 – 12:30	057	Nor Haslinda Binti Ismail , Tarisa Makina Kintakaningrum, Sharifah Sakinah Binti Syed Ahmad, Mohd Hariz Bin Naim@ Mohayat	The Use of Rakan Keselamatan (RK) System to Facilitate Campus Community in Reporting Incidents
12:30 – 12:45	093	Sanah Abdullahi Muaz , Yin Kia Chiam, Bashir S. Galadanci	A GQM-based method to support elicitation of sustainability requirements for mobile applications
LUNCH 12:45 – 14:00			
PARALLEL SESSION G1 (COMPUTER GAMES, GAMIFICATION, DATA MINING) SESSION CHAIR: DR. ZAMHAR ISMAIL / DR. SUPOJ HENGPRAPROHM			
TIME	PID	AUTHORS	TITLE
14:00 – 14:15	037	Leow Meng Chew , Lau Siong Hoe	Review on Generic Components of the MMORPGs
14:15 – 14:30	039	Mohamad Nurfalihin Mohd Othman , Haswadi Hasan, Habibollah Haron	Developing Reflex-Based Agent with Unity3D Game Engine
14:30 – 14:45	097	Aimi Najwa Sabri , Nor Haizan Mohamed Radzi, Haswadi Hassan	The State of Art Heuristic Pathfinding in Games
14:45 – 15:00	008	Mohd Yusof Mohammad Hafiz , Rosmadi Mokhtar	A Review on Taxonomy of Malware Analysis Studies
15:00 – 15:15	077	Bahaaeldin M. H. Awadallah, Su-Cheng Haw, Lay-Ki Soon	A Review on utilising XML as the mediated layer for data integration
15:15 – 15:30	125	Mohd Norhisham Razali , Noridayu Manshor	Object Detection Framework for Multiclass Food Object Localization and Classification
BREAK 15:30 – 15:45			
PARALLEL SESSION G2 (KNOWLEDGE MANAGEMENT AND SOFTWARE COMPUTING 3) SESSION CHAIR: PROF. DR. IR. VINESH THIRUCHELVAM			
15:45 – 16:00	068	Kok-Leong Koong, Su-Cheng Haw, Lay-Ki Soon	Labeling-Based Hybrid XML Fragmentation Model
16:00 – 16:15	087	Samini Subramaniam , Su-Cheng Haw, Lay-Ki Soon	An Effective Distributed Framework for XML Query Processing
16:15 – 16:30	088	Rabi Mustapha, Yuhanis Yusof , Azizi Ab Aziz	Computational Model of Situation Awareness for Decision Making in Driving
16:30 – 16:45	098	Vinesh Thiruchelvam , Gabriel Chong Sing Leung	Z Analyzer: Design Development of a Power Optimization Software Tool for Smart City Building Services

PARALLEL SESSION D (KNOWLEDGE MANAGEMENT AND SOFTWARE COMPUTING 4) SESSION CHAIR: DR. BOUNG YEW SIMON LAU			
TIME	PID	AUTHORS	TITLE
10:45 – 11:00	049	Waleed Hariri, Khairil Imran Ghauth, C.Eswaran	A Multimedia content recommender system using Table of Contents and content-based filtering
11:00 – 11:15	050	Md. Mahedi Hassan, Poo Kuan Hoong, and Bhawani Selvaretnam	Impact of the Mobility Management Protocols on the Handover Performance Assessment under Real-Time Video Steaming Network
11:15 – 11:30	072	Norhayati Daut, King Lieng Lau, Aslina Baharum, Hui Keng Lau and Asni Tahir	Utilization of Mobile Web Application for Online Food Ordering with Tracking System
11:30 – 11:45	060	Punitha Turumugon, Aslina Baharum, Rozita Hanapi, Nurfaizah Kamarudin, Emelia Abdul Rahim, Muhammad Omar	Users' Mental Model Pattern for User Interface Design of Mobile Shopping Apps
11:45 – 12:00	076	Masnida Hussin, Shirley Salimun	Crowdsourcing Platform: A Review for Governing Operating Model
12:00 – 12:15	078	Sayed Nafiz Haider, Su-Cheng Haw, Fang-Fang Chua	On Leveraging the Use of Case Studies to Recommend Design Methods: From the Perspective of Human-Centered Design Methodology
12:15 – 12:30	079	Norzariyah Yahya, Normi Sham Awang Abu Bakar	McCabe's Complexity and CK Metrics on the Internal Quality of Test First Implementation in Malaysian Education Settings
12:30 – 12:45	089	Boung Yew Simon Lau, Huong Yong Ting, Yong Wen Daniel Tan	Cost-Benefit Analysis Reference Framework for Human Motion Capture and Analysis Systems
LUNCH 12:45 – 14:00			
PARALLEL SESSION H1 (ARTIFICIAL INTELLIGENCE 2) SESSION CHAIR: DR. LAY-KI SOON			
TIME	PID	AUTHORS	TITLE
14:00 – 14:15	053	Mohamed Uvaze Ahamed. A, Eswaran. C, Kannan. R	Lossy Image Compression based on Vector Quantization using Artificial Bee Colony and Genetic Algorithms
14:15 – 14:30	110	Haziqah Shamsudin, Umi Kalsom Yusof	Hybrid of Ant Colony Optimization-ANN for User Modeling System
14:30 – 14:45	069	Ebrahim Khajeh, Siti Mariyam Shamsuddin and Shafaatunnur Hassan	Performance evaluation of metaheuristic algorithm on gpu-based system
14:45 – 15:00	073	A.R.M. Radzol, Khuan Y. Lee, W. Mansor, N. Saadun	Optimized Automated Baseline Correction for NS1 Adulterated Salivary Raman Spectra
15:00 – 15:15	014	Hayder M. A. Ghanimi, Azizi Ab Aziz, Faudziah Ahmad	An Agent-Based Modelling for a Reader's Cognitive Load and Performance
15:15 – 15:30	092	Chong Chai Chua, Tek Yong Lim, Lay-Ki Soon, Enya Kong Tang, Bali Ranaivo-Malançon	Analogical-based Translation Hypothesis Derivation with Structural Semantics for English to Malay Example-based Machine Translation
BREAK 15:30 – 15:45			
PARALLEL SESSION H2 (KNOWLEDGE DISCOVERY AND MACHINE LEARNING) SESSION CHAIR: DR. DECH THAMMASIRI			
TIME	PID	AUTHORS	TITLE
15:45 – 16:00	084	Mislan Mislan, Haviluddin Haviluddin, Rayner Alfred and A.F. Onnilita Gaffar	A Performance Neighborhood Distance (ndist) between K-Means and SOM Algorithms
16:00 – 16:15	102	Chong Tiam Fei, Umi Kalsom Yusof and Mohd Nor Akmal Khalid	Alzheimer Patient Detection using Bayesian Network Model
16:15 – 16:30	103	Mohd Nor Akmal Khalid, Umi Kalsom Yusof, Muhammad Thaqif Isa	Automatic Detection Method of Pipeline Anomalies on Caliper Data
16:30 – 16:45	117	Supoj Hengpraproh, Kairung Hengpraproh, Dech Thammasiri, Suvimol Mukviboonthai	Co-Evolving Ensemble of Genetic Algorithm Classifier for Cancer Microarray Data Classification
16:45 – 17:00	122	Dech Thammasiri, Supoj Hengpraproh, Kairung Hengpraproh and Suvimol Mukviboonthai	Imbalance classification model for churn prediction
17:00 – 17:15	107	Saada Ali Mohamed Daradi, Umi Kalsom Yusof and Nur Izzati Bt Ab.Kader	Prediction of Housing Price Index in Malaysia using Optimized Artificial Neural Network
17:15 – 17:30	036	Behnaz Nahvi, Jafar Habibi	Adoption of Runtime Quality of Service in Genetic Algorithm on Memory-equipped Service-Oriented Architecture

PARALLEL SESSION I (KNOWLEDGE MANAGEMENT AND SOFTWARE COMPUTING 5) SESSION CHAIR: DR. UMI KALSOM YUSOF			
TIME	PID	AUTHORS	TITLE
10:45 – 11:00	090	Nur Qamarina Mohd Noor, Siti Sophiyati Yuhaniz, Haslina Md Sarkan, Salwani Mohd Daud and Nurulhuda Firdaus Mohd Azmi	Development of MCU Architecture for IoT-based System
11:00 – 11:15	085	Hea Choon Ngo, Ong Sing Goh, Li Ching Liew, Yogan Jaya Kumar	GeoTravel: Harvesting Ambient Geographic Footprints from GPS Trajectories
11:15 – 11:30	086	Rozi Nor Haizan Nor, Azlina Ali, Muhamad Sufri Muhammad	Measuring Instrument Constructs for Knowledge Management System Governance Using Rasch Measurement Model
11:30 – 11:45	104	Siew Mei Fong, Umi Kalsom Yusof	The Influence of Aesthetic Design of E-commerce Website on Intention to Purchase
11:45 – 12:00	114	Ag Asri Ag Ibrahim, Yiap Shin Yi and Ryan Macdonnell Andrias	Kansei Engineering Concept in Sound Design
12:00 – 12:15	116	Ag Asri Ag Ibrahim, Alter Jimat, Ryan Macdonnell Andrias and Soffri Yusof	The sound framework of Parameter Mapping in Sonifying 3D hands Movements
12:15 – 12:30	134*	Ahmad Zuber Ahmad Zainuddin, Wahidah Mansor, Lee Yoot Khuan, Zulkifli Mahmoodin	Classification of EEG signal from Capable Dyslexic and Normal Children using KNN
12:30 – 12:45	119	Yonis Gulzar, Ali A. Alwan, Norsaremah Salleh, Imad Fakhri Al Shaikhli	A Model for Skyline Query Processing in a Partially Complete Database
LUNCH 12:45 – 14:00			
PARALLEL SESSION J1 (ARTIFICIAL INTELLIGENCE) SESSION CHAIR: DR. ALIIMRAN IMRAN NORDIN			
TIME	PID	AUTHORS	TITLE
14:00 – 14:15	100	A. Imran Nordin, Matthew Hudson, Alena Denisova, Jen Beeston	Perceptions of Telepresence Robot Form
14:15 – 14:30	149	Shirin Noekhah, Naomie Salim and Nor Hawaniah Zakaria	A Novel Model for Opinion Spam Detection Based on Multi-Iteration Network Structure
14:30 – 14:45	128	Toqir A. Rana, Yu-N Cheah	Sequential Patterns-Based Rules for Aspect-Based Sentiment Analysis
14:45 – 15:00	129	Sofian Hazrina, Nurfadhlna Mohd Sharef, Hamidah Ibrahim, Masrah Azrifah Azmi Murad, Shahrul Azman Mohd Noah	Linguistic-Based SPARQL Translation Model for Semantic Question Answering System
15:00 – 15:15	137	Khalifa Chekima and Rayner Alfred	Non-English Sentiment Dictionary Construction
15:15 – 15:30	126	Samaneh Nadali, Masrah Azrifah Azmi Murad, Nurfadhlna Mohamad Sharef	Sarcastic Tweets Detection Based on Sentiment Hashtags Analysis
BREAK 15:30 – 15:45			
PARALLEL SESSION J2 (NETWORKING AND INTELLIGENCE SYSTEM) SESSION CHAIR: DR. ROHAYA BINTI LATIP			
15:45 – 16:00	048	HuiKeng Lau, YeuQi Mok, Norhayati Daut, Asni Tahir, SengKheau Chung, BihLii Chua	Beacon-integrated Attendance App
16:00 – 16:15	106	Ahmed Shakir Al-Hiti, Rohaya Latip, R.K.Z Sahbudin, Raja Azlina Raja Mahmood	Comparative Analysis of Routing protocols over WiMAX
16:15 – 16:30	135	Herlina Abdul Rahim, Javad Abbaszadeh Barghoshadi, Ruzairi Abdul Rahim	Image Reconstruction Technique for the Ultrasonic Tomography System VIA Metal Pipe
16:30 – 16:45	138	Al-Hadi Ismail Ahmed Al-Qasem, Nurfadhlna Mohd Sharef, Md Nasir Sulaiman, Norwati Mustapha	Temporal-based Approach To Solve Item Decay Problem In Recommendation System

PARALLEL SESSION K (KNOWLEDGE MANAGEMENT AND SOFTWARE COMPUTING) SESSION CHAIR: DR. LAU HUI KENG			
TIME	PID	AUTHORS	TITLE
10:45 – 11:00	120	Bokolo Anthony Junior, Noraini Che Pa , Rozi Nor Haizan Nor, Yusmadi Yah Jusoh and Teh Noranis Mohd Aris	Implementation of Risk Mitigation among IT Governance Practitioners in Malaysia
11:00 – 11:15	124	Siti Noraishah Musa , Ahmad Rafi, Peter Woods	Experience Design Framework for Reconstructed Virtual Architectural Heritage
11:15 – 11:30	134	Zaturrawiah Ali Omar , Chin Su Na, Albira Sentian and Kong Lan Yien	Decision Tree for Pre-Graft Orthodontic Treatment: A Case Study of Cleft Lip and Palate Patients in the West Coast of Sabah
11:30 – 11:45	135*	R.U.K Raja Mohd Radzi, W. Mansor, and Juliana Johari	Optimised Electronic Circuit Model of Sensitive Type of Mycobacterium Tuberculosis
11:45 – 12:00	113	Raihani Mohamed , Thinagaran Perumal, Md. Nasir Sulaiman, Norwati Mustapha, M.N.Shah Zainudin	Multi Label Classification on Multi Resident in Smart Home using Classifier Chains
12:00 – 12:15	140	Teck Chai Tiong	Robust Transceiver in MIMO Relay Systems with Direct Link
12:15 – 12:30	142	Sharifah Milda Amirul, Ishak Shali and Aslina Baharum	Utilization of Electronic Business Plan Program for Small and Medium Enterprises (SMEs)
12:30 – 12:45	133	Mohd Suhairi Md Suhaimin , Mohd Hanafi Ahmad Hijazi, Rayner Alfred, Frans Coenen	Mechanism for Sarcasm Detection and Classification in Malay Social Media
LUNCH 12:45 – 14:00			
PARALLEL SESSION L1 (KNOWLEDGE DISCOVERY AND MACHINE LEARNING) SESSION CHAIR: ASSOC. PROF. DR. SHAHREN B AHMAD ZAIDI ADRUCE			
TIME	PID	AUTHORS	TITLE
14:00 – 14:15	130	Syaifulnizam Abd Manaf , Norwati Mustapha, Md. Nasir Sulaiman, Nor Azura Husin, Mohd Radzi Abdul Hamid	Artificial Neural Networks for Satellite Image Classification of Shoreline Extraction for Land and Water Classes of the North West Coast of Peninsular Malaysia
14:15 – 14:30	133*	Zulkifli Mahmoodin , Wahidah Mansor, Lee Yoot Khuan, Ahmad Zuber Ahmad Zainuddin	Support Vector Machine Classification of EEG signals for Word and Non-Word Writing in Normal, Poor Dyslexic and Capable Dyslexic Children
14:30 – 14:45	118	Shahren Ahmad Zaidi Adruce , Abdullah-Al-Jubair, Lee Nung Kion	Electronic Opinion Analysis in Organizational Culture Audit
BREAK 15:00			

006: Evaluation of Network Traffic Analysis Using Fuzzy C-Means Clustering Algorithm in Mobile Malware Detection

Ali Feizollah, Nor Badrul Anuar, Rosli Salleh

Department of Computer System and Technology, Faculty of Computer Science and Information Technology, University of Malaya, 50603, Kuala Lumpur, Malaysia

Abstract: Due to widespread use of mobile devices and open source nature of Android operating system, such devices have been targeted by attackers. The Android malware steadily grow in number and complexity. This motivates researchers to develop detection methods. In this paper, we introduce the use of Fuzzy C-Means clustering in Android malware detection. We chose 800 malware samples and 100 clean applications, and collected generated network traffic. Selected features were extracted from the network traffic, and then used in Fuzzy C-Means clustering algorithm. The results show that this algorithm is capable of clustering our data into two groups of clean and malicious data. Furthermore, we validated our results by comparing them to our labelled dataset, which showed 13% discrepancy in results.

Keywords: Android malware, fuzzy c-means, clustering, network traffic

007: Term Weighting Scheme Effect in Sentiment Analysis of Online Movie Reviews

Harnani Mat Zin, Norwati Mustapha, Masrah Azrifah Azmi Murad, Nurfadhlina Mohd Sharef

Faculty of Computer Science and Information Technology, University Putra Malaysia, 43400 Serdang, Selangor, Malaysia

Abstract: Sentiment analysis is an evolving field of a study that deals directly with the online expressions posted by the user via the Internet with the main objective to automate the process of mining opinions into valuable information. For online reviews, this analysis deals with the identification of positive and negative reviews to help the consumer and the distributor in the decision-making process. In text analysis tasks, such as text classification and sentiment analysis, the appropriate choice of term weighting schemes will have a huge impact on the effectiveness of the analysis. This paper explores the effect of using term weighting scheme in the sentiment classification of online movie reviews. Specifically, the researchers applied Support Vector Machine (SVM) with linear and non-linear kernels to perform the classification process. The main finding of this study was that LinearSVC when used with TF-IDF improved the classification performance by as much as 87%. Thus, LinearSVC, together with TF-IDF, can serve as an effective technique in the extraction process of online documents.

Keywords: term weighting, sentiment analysis, movie reviews, TF-IDF, SVM

127: Evaluating Player Enjoyment in Mobile Games

Nurul Hidayah Mat Zain¹, Mohd Harith Hashim¹, Aslina Baharum², Ismassabah Ismail¹, Rahayu Abdul Aziz¹, Anita Mohd Yasin¹

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Abstract: Computer games present themselves as one of the enjoyable and effective approaches to improve cognitive abilities, particularly when dealing with children. Compared to the traditional approach, computer games are certainly more engaging and entertaining. Besides, computer games have the ability to impact a wider aspect of cognitive abilities such as visual short-memory, multitasking and spatial cognition, which can all be enhanced by playing games. The objective of this study is to evaluate players' enjoyment using EGameFlow Model on mobile games named SuBingo. The evaluation of SuBingo was carried out by conducting expert review session. Five expert reviewers were involved in this session. The result proved that the experts agreed that SuBingo was enjoyable and can help users to further improve their mental arithmetic skills. As a conclusion, the SuBingo game almost fulfills the criteria of EGameFlow Model as one of enjoyable mobile game.

Keywords: Expert Evaluation, Enjoyment, Mobile Games.

016: Multisensor Surveillance Data Correlation Algorithm

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Abstract: At present, radar is no longer the sole technology used to perform surveillance of air traffic. The extensive deployment of satellite systems and air-to-ground data links have led to emergence of various sensor technologies for airspace surveillance, such as Wide Area Multilateration (WAM), Automatic Dependent Surveillance Broadcast (ADS-B) and Automatic Dependent Surveillance Contract (ADS-C). The sensor technology evolution has also led to emergence of techniques to fuse data from the multisensors to produce a single output of higher performance in-terms of accuracy and integrity. Multi-radar data fusion techniques are well established and is being used by many Air Traffic Control (ATC) centers worldwide. However, research on multisensor data fusion for ATC is still in its infancy. The first step in the data fusion is correlation of data from the different sensors for a particular target at time, t . The correlation process is not an easy task due to the differences in performance of the various sensors. This paper reviews multisensor tracker architectures to identify the problems arise to perform data correlation from multisensors. It then reviews existing algorithms available in the public domain for multisensor track correlation. Finally, it analyzes the advantages and drawbacks in each of the algorithms. Based on the findings, the authors are planning to develop an effective algorithm for multi-sensor data correlation in the future work.

Keywords: Data correlation, multi-sensor tracking, Air Traffic Control (ATC) surveillance

023: Recognition of Sign Language System for Indonesian Language using Long Short-Term Memory Neural Networks

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Abstract: SIBI (Sign Language System for Indonesian Language) is the official sign language system for the Indonesian language. This research aims to find a suitable model for performing SIBI-to-text translation on inflectional word gestures. Extant research have been able to translate the alphabet, root words, and numbers from SIBI to text. Inflectional words are root words with prefixes, infixes, and suffixes, or some combination of the three. A new method that splits an inflectional word into three feature vector sets was developed. This reduces the amount of feature sets used, which would otherwise be as big as the product of the prefixes, suffixes and root words feature sets of the inflectional word gestures. Long Short-Term Memory (LSTM) is used, as this models can take entire sequences as input and does not have to rely on pre-clustered per-frame data. LSTM suits this system well as the SIBI sequence data has long-term temporal dependency. The 2-layer LSTM performed the best, being 95.4% accurate with root words. The same model is 77% accurate with inflectional words, using the combined skeleton-image feature set, with an 800-epoch limit. The lower accuracy with inflectional words is due to difficulties in recognizing prefixes and suffixes.

Keywords: Inflectional Words, Long Short-Term Memory, Deep Learning, Kinect, sign language, SIBI.

024: Supervised Growing Approach for Region of Interest Detection in Iris Localisation

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Abstract: With the development of current information technology, health diagnosis based on iris diagnosis and biometrics has received more attention. Iris localisation is an important phase in iris recognition. Iris localisation is not an easy task, and it will cause wrong location in iris localisation especially when dealing with non-ideal iris images. Traditional iris location methods involve a large range of searches, which is computation wasting and sensitive to noise. It may not accurately describe the actual pupillary boundary and may cause errors in feature extraction and recognition. To address this problem, this paper proposes an iris localisation method for ideal and non-ideal iris images. The algorithm is based on finding the region of interest (ROI) classification by using a support vector machine (SVM) with a histogram of grey level as a descriptor in each region from the region growing. The valid ROI found from the probabilities graph of the SVM was obtained by looking at the global minimum conditions determined by a second derivative model in a graph of functions. This helps in eliminating sensitive noise and reducing the amount of calculations when reserving useful information as much as possible. Subsequently, the classified image will be localised by using the Hough Transform method. The experimental results show that the proposed algorithm can efficiently improve the Hough Transform method in localising the boundary of the iris.

Keywords: Iris Localisation; Support Vector Machine; Region Growing; Region of Interest.

029: An Efficient Rain Streaks Detection and Removal for Single Image Using Hybridization of Rain Detection and Rain Removal Technique (HyDRA)

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Abstract: Rain streaks detection and removal is one of the fundamental topic studied in the field of image processing. The presents of rain in an image has led to the degradation of the image. This paper focuses on detection and removal of rain streaks in a static image. In general, Hybridization of rain streaks detection and rain removal technique consists of several stages. One needs to enhance the image by applying contrast enhancement and bilateral filtering to produce low frequency and high frequency of the image. In order to produce rain component and non-rain component, HyDRA will implement a classical dictionary learning algorithms. To achieve smooth detection of rain streaks process, each pixels magnitude in the rain component will be computed. For the removal stages, the non-rain component is subtracted from the image and will be integrated with the low frequency part from the filtering stage. Based on the performance test that has been conducted, the captured PSNR values from our experiments proved that HyDRA managed to detect and remove rain streaks from a static image efficiently. The significant values given by the PSNR also certified confirmed that HyDRA able to detached the bright background colours easily for both test images.

Keywords: Rain streak, rain detection, rain removal, static image, HyDRA.

031: A Robust Technique for Edge Detection Using Integration of Entropy Threshold – Canny (InTEC)

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Abstract: Edge detection is one of the important stages in digital image processing and computer vision. In general, edge detection is a process of identifying and validating sudden discontinuities in pixel intensities for grayscale images. This paper focuses on discussing a robust technique in edge detection using integration of several well-known techniques. At first, contrast enhancement approach using contrast limited adaptive histogram equalization (CLAHE) technique was performed to increase the brightness of the images. An adaptive filtering process will be applied in order to reduce noisy elements. To achieve our aims on producing a robust technique, we synthesized Canny technique with modified entropy based method. Based on the conducted performance test, InTEC technique able to identify the edge easily even though the noise percentage increases up to 30%. The high recorded peak signal-to-noise ratio (PSNR) values showed that InTEC technique significantly robust as compared to other prominent techniques.

Keywords: InTEC, edge detection, entropy based threshold, Canny, digital image processing.

009: Information Security Culture Dimensions in Information Security Policy Compliance Study: A Review

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Abstract: The establishment and cultivation of Information Security Culture (ISC) in an organization can promote desired employees' behavior in adhering to Information Security Policy (ISP). Some factors of ISC have been investigated in ISP compliance studies, however there is no clear indication numbers of ISC dimensions available and how significant these dimensions' relation to ISP compliance. This paper review and discusses previous works on ISP compliance studies that using ISC factors as ISC dimensions. All founded key factors of ISC concept from ISC literature are analyzed and compared against ISC dimensions that have been used in ISP compliance studies. The results have shown that there are still many ISC dimensions available to be investigated in ISP compliance study. These findings also confirm that ISP compliance studies based on organizational ISC were not comprehensive enough in terms of its dimensions which led to limitation in providing a convincing conclusion of ISP compliance based on ISC.

Keywords: Information Security Policy Compliance; Information Security Culture; Information Security Culture Dimension.

019: Comparison of Graphical Passwords Using ISO 9126

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Abstract: This article is to learn the characteristics of graphical passwords by comparing different categories of graphical passwords with the ISO 9126 model1. The ISO 9126 model1 is divided into six parts, which are usability, reliability, functionality, maintainability, efficiency, and portability. Each part listed is sub-categorised by the standard and is used to evaluate the quality of a product. Multiple graphical passwords are chosen from different classification of graphical passwords for thirty users to test and fill in the survey. Then a survey was conducted to compare each of these five categories of graphical passwords based on the ISO 9126 model1. Thirty users of different ages and gender were invited to the booth to test the graphical password systems and fill in survey. The survey results as described in the article show us which category of graphical passwords contains more of the ISO 91261 characteristics.

Keywords: Graphical Passwords, Graphical Password System, Human Computer Interaction Security, User Perception

058: Wireless Sensor Networks: A Framework for Community and Educational Gardens

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Abstract: Community and educational garden are seen as a platform for people in city centers to have better quality of lives where neighbors' and kids can meet, socialize and interact creating harmonious living environment. It is a form of educational technique to expose children and students on food production and ways to nurture values. The lack of space and interest make farming activities less popular among people in the city centers. This paper highlights some reasons why community and educational gardens are required and describes some of the challenges faced. The paper proposes technology as the essence for creating interest among communities and school children and proposes an application framework that is available for community and education gardens that integrates wireless sensor networks and mobile applications to monitor the gardens. The proposed application is feasible to build using available infrastructure at home and school buildings which is cheap to build, easy to maintain and safe to operate.

Keywords: Wireless Sensor Networks, Community and Educational Gardens, Wireless LAN.

081: OpenFlow based Load Balancing for Software-Defined Network Applications

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Abstract: The emergence of Software-Defined Networking (SDN) has triggered innovative ideas related to the field of network design and management. SDN is seen as an ideal platform for network that keeps expanding and require new adaptation in order to meet the demand from the user. In this work, load balancing method is used in SDN environment to provide congestion control in the network. The load balancing method exploit Dijkstra's algorithm to find the best path in the network. The experiment is conducted using Mininet emulator whereby OpenFlow based method is used together with Open Daylight controller. Results show that the proposed method is able to improve the performance of the network in term of average bandwidth ratio and average packet delay.

Keywords: Load Balancing, OpenFlow, Dijkstra's Algorithm, Open Daylight Controller, Software-Defined Network

091: Number of Stage Implication towards Multistage Interconnection Network Reliability

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Abstract: The reliable operation of interconnection networks is main concern in system performance. Reliable operation in multistage interconnection networks depend on their topology, network configuration and number of stages in the system. Performance improvement and reliability increasing are two major attributes in multistage interconnection network topology. As the number of stage and system complexity increase the reliability performance becomes an important issues. In this paper we observe two topological of multistage interconnection network called the shuffle exchange network and gamma network to investigate the effect on number of stage in multistage interconnection network reliability. Three types of stages namely as basic stage, lesser stage and extra stage have been compared and the results shows that lesser stage provide highest reliability performance among all topological measured in this paper.

Keywords: Shuffle Exchange Network, Gamma, Reliability, Number of Stage, Multistage Interconnection Network.

041: Mobile App Development using Cloud-based Platforms

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Abstract: Building, testing and monitoring a mobile application in cloud is difficult to perform because of unstable mobile environments. It usually involves a lot of configurations such as data storage, backend logic and content delivery. The objective of this research is to identify and explore the use of cloud based platforms for mobile app development. A model for mobile app development using cloud based platforms was proposed. AWS Mobile Hub platform was used to develop a mobile learning app. The app was tested in the AWS Mobile Hub cloud platform environment using AWS Device Farm. The mobile learning app can be installed in an android phone successfully. This shows that by using the facilities offered by AWS Mobile Hub, developers can effectively build, test dan monitor a mobile application.

Keywords: Cloud Computing; Mobile application development; AWS Mobile Hub

010: An Introduction to Z-Numbers with Interval Type-2 Fuzzy TOPSIS

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Abstract: Decisions are based on ability to decide several possibilities. Decisions are uncertain, imprecise, incomplete and a challenge that is hard to meet. Z-numbers involve more uncertainties than fuzzy sets. They provide us with additional degree of freedom to represent the uncertainty and fuzziness of the real situations. In this paper, we introduce a Z-numbers with Interval Type-2 Fuzzy TOPSIS (IT2FTOPSIS) to handle uncertainty in decision problems. We provide an example to illustrate the idea of one-by-one steps Z-numbers with IT2FTOPSIS based Fuzzy Multi-Criteria Decision Making (FMCDM). The proposed method provides us with another useful way to handle FMCDM problems in a more intelligent and flexible manner due to the fact that it uses Z-numbers and interval type-2 fuzzy sets (IT2FSs).

Keywords: Z-numbers, interval type-2 fuzzy TOPSIS, multi-criteria decision making

082: Natural Language Query Approach for Embodied Conversational Agent

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Abstract: Developing an embodied conversation agent that is able to exhibit a human-like behavior while communicating with human agent requires hybrid approaches. A hybrid approach is described to improve search performance by providing a natural language query with embodied conversational agent (ECA). This paper presents and discusses several technical issues in implementing the conversation intelligent agent. Our focus is on natural language query approach that enables structured queries on the field of pandemic crisis, Bird Flu H5N1. A Crisis Communication Network, called CCNet, is established based on a novel algorithm incorporating natural language query and embodied conversation agent simultaneously. Another significant contribution of our work is the development of an Automated Knowledge Extraction Agent (AKEA) to capitalize on the tremendous amount of data that is now available online to support our experiments.

Keywords: Embodied Conversational Agent (ECA), Automated Knowledge Extraction Agent (AKEA), Natural Language Understanding and Reasoning (NLUR), Question Answering (QA) System.

020: Robot Navigation in Static Indoor Environment via Accelerated Iterative Method

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Abstract: Essentially, a truly autonomous mobile robot must be capable of finding its own path from start to goal location without colliding with any obstacles. This paper proposed a robust searching algorithm that relies on the use of harmonic potentials of the environment to generate smooth and safe path for robot navigation in a static known indoor environment. The harmonic potentials are computed via Accelerated Over-Relaxation (AOR) iterative method for rapid computation. The result shows that the proposed algorithm performed better than the existing methods.

Keywords: Robot Path Planning, Elliptic Partial Differential Equation, Finite Difference Scheme, Accelerated Over-Relaxation (AOR), Iterative Method.

030: A Survey on Haze Removal Techniques in Computer Vision and Graphics Application

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Abstract: The El Nino phenomenon around the globe was sparked by increased demand especially in the field of computer vision and image processing. This situation can lead to bad weather such as haze. Haze is also known as atmospheric phenomenon that can disturb and degrade our vision quality at outdoor scene. Image captured during hazy condition would lead to suffer from poor image quality. The image taken is required to be restored and to be enhanced towards quality of original image. Thus, many researchers have attempted to study the most suitable methods in order to remove haze on the degraded input image. This paper is proposed to review several existence techniques of haze removal. From this study, we hope that an efficient single image dehazing technique will be developed in the future especially for the real-time application.

Keywords: Image Dehazing, Haze Removal, Single Image Dehazing, Single Image Haze Removal, Real-time Image.

033: A Hybrid Artificial Intelligent System for Age Estimation Based on Length of Left Hand Bone

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Abstract: Age estimation is used in forensic anthropology to facilitate the identification of individual remains and of a living person. However, the used of artificial intelligent in estimating the age based on left hand bone measurement is very limited. This paper analyzes age estimation using single artificial intelligence and hybrid artificial intelligence model which is Artificial Neural Network (ANN) and Particle Swarm Optimization-Artificial Neural Network (PSO-ANN), respectively. The inputs used are the length of left hand bones in x-ray images taken from Asian data set. By comparing the performance measurement of these two models, the PSO-ANN model is outperform the ANN single modelling model which is 0.942 and 1.029 for R-square and MSE value, respectively, for male, while for female, 0.909 and 1.398 for R-square and MSE value, respectively. The PSO-ANN outperform the ANN model even only using three bones as inputs for male and six bones for female, compared to the ANN which is use all bones as inputs. To conclude, the hybrid artificial intelligence model is good in selecting the most relevance bones in the left hand, and can outperform results of the single artificial intelligence model.

Keywords: age estimation, left hand bone, hybrid artificial intelligence.

042: Transformation of Text-to-3D Graphics

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Abstract: This paper discusses the model to transform a mathematical problem-based questions to 3D graphics display. Three components have been introduced in transformation of text-to-3D graphic. 1-Text extraction, 2-Matching operation and 3-3D Graphics Display. The first component analyses the input text by extracting the noun, number and mathematical operation keywords. The keywords are categorized by the type of mathematical operation. In the second component, noun category and 3D graphics are matched based on indexing approach. As well as mathematical operation keyword is matched with mathematical operation. Finally, the third component is implemented by displaying the graphics separately based on the tens, hundreds or thousands of the number. The proposed model has been tested to 124 mathematical problem-based questions. Analysis and evaluation of the appropriateness between the illustration of 3D graphics and the keyword extracted from the mathematical problem-based questions have been done. The result of the analysis shows 54% of the total mathematical problem-based questions were able transformed to 3D graphics display.

Keywords: 3D Graphics, Logical Model, Text-to-3D, Matching Process

010: An Introduction to Z-Numbers with Interval Type-2 Fuzzy TOPSIS

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Abstract: Decisions are based on ability to decide several possibilities. Decisions are uncertain, imprecise, incomplete and a challenge that is hard to meet. Z-numbers involve more uncertainties than fuzzy sets. They provide us with additional degree of freedom to represent the uncertainty and fuzziness of the real situations. In this paper, we introduce a Z-numbers with Interval Type-2 Fuzzy TOPSIS (IT2FTOPSIS) to handle uncertainty in decision problems. We provide an example to illustrate the idea of one-by-one steps Z-numbers with IT2FTOPSIS based Fuzzy Multi-Criteria Decision Making (FMCDM). The proposed method provides us with another useful way to handle FMCDM problems in a more intelligent and flexible manner due to the fact that it uses Z-numbers and interval type-2 fuzzy sets (IT2FSs).

Keywords: Z-numbers, interval type-2 fuzzy TOPSIS, multi-criteria decision making

032: Performance evaluation of machine learning algorithms for spam profile detection on Twitter using WEKA and RapidMiner

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Abstract: Twitter social network is growing on a daily basis and as a result, attackers have developed interest in distributing malicious contents on this platform. Numerous studies have investigated the possibility of reducing spamming activities on Twitter with each study focusing on introducing a new set of features for countermeasure. This paper adopts the set of features for identifying spammers on Twitter and introduces additional features to improve classifier performance. The performance of four machine learning algorithms: Random forest (RF), Support vector machine (SVM), K nearest neighbor (KNN), and Multilayer perceptron (MLP) across two popular machine learning tools - WEKA and RapidMiner were evaluated. Results from the experiment show that SVM, KNN, and MLP on WEKA outperformed those algorithms on RapidMiner. However, in the case of RF, RapidMiner achieved higher accuracy compare to RF on WEKA. Based on the 32 features in the dataset, MLP and RF on both WEKA and RapidMiner outperformed other classifiers with accuracy of 95.42% and 95.44% respectively. These findings would be useful for researchers willing to develop a machine learning model to detect malicious activities on social network.

Keywords: Online social network, spam detection, WEKA, RapidMiner, classification, machine learning.

065: Hybrid Relief-f Differential Evolution Feature Selection for Accelerometer Actions

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Abstract: The inertial sensor is now becoming one of the devices for various purposes such as in the field of intelligent environment, crime investigation and also for monitoring physical activity towards better health style. A major concern of the World Health Organization (WHO) is the rapid increase in the percentage of obese among the world population. Dietician strongly encourages people to spend their time twice a week to perform any physical activity to minimize the potential of diabetes. Hence, micro-machine electromechanical system sensors (MEMs) give an advantage for the researcher to conduct their research on activity recognition by integrating it with the artificial intelligent method. Nevertheless, when dealing with the huge dimension of features, it will consume a lot of memory and requires a very high processor either performing in online or offline. Differential evolution (DE) are used as a feature selection after those features ranked by relief-f search algorithm in order to minimize the number of features used as an input for the classifier.

Keywords: Accelerometer, differential evolution, relief-f, k-NN, imbalance.

044: Exploring Edge-Based Segmentation Towards Automated Skin Lesion Diagnosis

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Abstract: Automated medical diagnosis has many potentials and benefits to support healthcare. Therefore, there is growing number of research on this topic. There are many challenges before automated medical diagnosis is accepted by the healthcare industry and the public as a tool to facilitate healthcare professionals. In this paper, initial work on exploring edge-based segmentation algorithms to identify areas on an image that form the skin lesion is presented. Four edge-segmentation operators namely Canny, Prewitt, Sobel, and Roberts were tested using images from online image database. Experiments show results with mixed accuracy depending on the quality of image as well as the pattern of the skin lesions.

Keywords: Edge-based segmentation, Automated medical diagnosis, Skin lesions.

046: Extraction and Exploratory Analysis of Texture Features on Images of Timber Defect

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Abstract: This paper discusses the development and analysis of texture features based on orientation independent Grey Level Dependence Matrix (GLDM) to characterise images of timber defects and clear wood. A series of processes including feature extraction, analysis of quantisation and displacement parameters, and feature analysis were implemented to facilitate data understanding in order to construct a good feature set that could significantly discriminate between defects and clear wood classes. To evaluate the discrimination capability of the features extracted, visual exploratory analysis was performed on defect and clear wood images of Meranti (*Shorea spp.*) timber species. Results from the analysis showed that there was substantial difference between defect classes and clear wood using the proposed multivariate texture features.

Keywords: timber image, feature extraction, GLDM, texture, timber defect, feature analysis, defect detection

051: A new similarity measure based Affinity propagation for data clustering

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Abstract: A new unsupervised clustering technique called Affinity Propagation (AP) has been applied in many fields such as computer vision and bioinformatics. AP shows an improved performance than diverse reputable traditional clustering methods such as k-medoids, k-means. Normally ordinary clustering methods use a predefined set of cluster centers. However, all points in dataset considered as probable cluster center in AP. Potential centers emerged based on transmitting message among similarity pairs of data. The input similarity matrix of AP is calculated from the negative Euclidean distance method, which is used to find the similarity between data points. Despite the good performance of AP, the negative Euclidean distance tends to be sensitive to deformation. In this paper, the drawback is addressed by proposing two similarity measure methods for measuring the similarities between pairs of data points of a dataset. The proposed method is evaluated using Adjusted Rand index, Jaccard Coefficient and Fowlkes and Mallows. The experimental results show the proposed methods outperformed existing clustering method in accuracy.

Keywords: Data clustering, Affinity Propagation algorithm, similarity measure.

066: Malware Classification Using Ensemble Classifiers

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Abstract: Antimalware offers detection mechanism to detect and take appropriate action against malware detected. To evade detection, malware authors had introduced polymorphism to malware. In order to be effectively analyzing and classifying large amount of malware, it is necessary to group and identify them into their corresponding families. Hence, malware classification has appeared as a need in securing our computer systems. Algorithms and classifiers such as k-Nearest Neighbor, Artificial Neural Network, Support Vector Machine, Naïve Bayes, and Decision Tree had shown their effectiveness towards malware classification in various recent researches. This paper proposed the concept of ensemble classifications to classify malwares, in which three individual classifiers, k-Nearest Neighbor, Decision Tree and Naïve Bayes classifiers are ensemble by using the bagging approach.

Keywords: Individual Classifier, Bagging, Ensemble Classifier, Opcodes Frequencies, Normalization.

011: Trend Cluster Analysis of Wave Data for Renewable Energy

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Abstract: In this paper, we proposed a trend cluster analysis technique for identifying and analysing time series wave data. With this application, it can assist management to identify changes that occur in time series data as well as facilitate researchers evaluate this type of data. We use the technique to cluster and analyse the wave data in order to identify the wave heights and sea condition for generating renewable energy in Tioman Island coastal area. The application was developed using Self Organizing Map (SOM) Clustering technique.

Keywords: Renewable Energy, Trend cluster analysis, Clustering, Time series, Self Organizing Maps.

012: Sharing Explicit Knowledge: Designing a Peacekeeping Operation Databank

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Abstract: Knowledge management (KM) implementations are still far behind in Malaysian Military in managing its explicit knowledge. A knowledge management systems and technology can support and enhance knowledge workers to work together, share and learn more effectively so as the organizational knowledge becomes more productive. A well designed knowledge databank is important as it provides robust and accurate knowledge to the employees. This paper proposes a KM databank framework for collecting explicit knowledge that exists in the Military organizations. The focus of the explicit knowledge content is on the Military peacekeeping operations.

Keywords: Military Explicit Knowledge; Database; Knowledge Discovery; Design

017: UEWDM User Interface Design: A Case Study of i-GIMS

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Abstract: Web applications have a different complex features and it raised new issues in design modeling, including user interface design in web application development. The design phase should be able to cope with those user interface modeling issues such as lack of GUI aspects and web designers should provide a clear design view in the web design process. Thus, in this paper, we propose sub-design models in UEWDM user interface design phase by separating it into two sub-designs called Logical Abstract Model and Physical Abstract Model. Our contributions rely on the user interface design structure pattern, which would be able to support the complex processes modeling in GUI aspects. The proposed approach is demonstrated through i-GIMS UPM case-study, a portal for postgraduate student.

Keywords: User Interface Design, Web Applications, UML Profiles, Web Design Model.

021: The Retelling of Malaysian Folktales: CERITERA

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Abstract: Folktales can be defined as tale or story that passed on through oral tradition among people in the society. Unfortunately, Malaysian folktales have been slowly forgotten by the young generations. Some did not even have the knowledge of such existence. Therefore, there is a need to develop Malaysian folktales. Hence, this paper highlights the development of a Malaysian folktales name Ceritera. It will focus on Hikayat Hang Tuah for children aged from 6-8 years old. Among the tools used are Adobe After Effect, Adobe Photoshop, Unity-Game and Fungus Visual Novel. A preliminary study has been conducted with 70 respondents in order to support the problems and to gauge the awareness of Malaysian folktales. Result shows that majority of them has not aware of the folktales. A game based on Hikayat of Hang Tuah was developed named Ceritera. A usability study is also conducted with ten users. The results show a positive feedbacks on the developed Ceritera. It is hope that the research will help to motivate and popularize the Malay folktales among the young generation especially the Alpha-Gen.

Keywords: Folktales, Malaysian Folktales, Young generation, Multimedia, Cognitive Learning.

022: A Framework for Designing UCP-Based Effort Estimation

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Abstract: Use Case Points (UCP) is seen as one of the most popular estimation models for object-oriented software development. Since year 2005, more than 10 UCP-based effort estimation techniques have been proposed either to give more options or to enhance the capability of UCP. However, with this tremendous growth of UCP-based effort estimation techniques, many researchers unaware with the quality of the supporting tool. As far as we are concerned, none of reusable software framework was proposed to guide software practitioners in designing UCP-based effort estimation applications. Therefore, this paper will review and propose UCP-based framework to be used as a basis in designing UCP-based effort estimation applications. The recommended effort estimation techniques were selected based on attributes-based framework. The results show that four techniques have been selected and after doing some comparison, we found that approximately more than 50 percent of the steps will give some effect to the basic design of UCP technique.

Keywords: Use Case Points, Effort Estimation, Framework.

025: An Investigation on the Usability of Mobile Travel Guide Application: A Comparison Study

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Abstract: The sophistication of interactive travel guide mobile application technologies has increased rapidly over the years. A dynamic travel app-user interaction during traveling is an important part of user experience (UX). However, in regular travel application settings, essential user interface (UI) design for easy navigation can be a challenge for some user. In this paper, a study of three different travel guide applications available on the market was carefully chosen to further experiment and measure the user experience through System Usability Scale (SUS). The method of 1-Way Within Subjects ANOVA (or repeated measure design) was conducted to determine the significant differences between the three travel guide applications design on a sample size of 30 participants. Findings show that there was a significant effect of travel guide type, with reading of Wilks' Lambda = 0.35, $F(2, 28) = 25.23$, $p = 0.00$. Hence, Paired Samples T-Tests were conducted to compare the three post hoc tests. Results indicated that interface design type does have an effect on user experience. Consequently, the application with the most familiar function and the simplest, straight forward visual display were thought to be the most effective, efficient, and satisfied from participants.

Keywords: Mobile Application, Travel Guide, User Interface (UI), User Experience (UX), Usability.

026: Integrating Interactive Multimedia Objects in Mobile Augmented Reality for Sarawak Tourism

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Abstract: Augmented Reality (AR) is a form of technology that superimpose virtual object or content in a real-world environment to create a mixture of reality. This research studies ARToolKitPlus tracking and developed an Android based AR system which integrate mobile graphics and interaction modules, such as audio, video and 3D objects. The development of multimedia based mobile AR system involved video capturing, image processing, mobile graphics and interactive multimedia features. Android camera Application Programming Interface (API) was implemented for video capturing purposes. In order to perform image processing tasks, an image library was built such as greyscale transformation and thresholding. The graphics module for this system was built using OpenGL ES and PowerVR graphics API. Whereas, audio and video API for Android platform were used to build multimedia based audio and video module. As for interaction module, technique of color picking algorithm was applied. Henceforth, a prototype of mobile Sarawak Tourism system was developed to evaluate the multimedia based modules functionalities testing; text, animations, audio, video, 2D/3D object interactions. A preliminary survey was conducted to measure the interaction performance and usability of multimedia based modules AR on Sarawak Tourism application.

Keywords: Augmented Reality, Graphics, Multimedia, Interactions, Virtual Object, OpenGL ES.

083: Short-Term Time Series Modelling Forecasting Using Genetic Algorithm

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Abstract: The prediction analysis of a network traffic time series dataset in order to obtain a reliable forecast is a very important task to any organizations. A time series data can be defined as an ordered sequence of values of a variable at equally spaced time intervals. By analyzing these time series data, one will be able to obtain an understanding of the underlying forces and structure that produced the observed data and apply this knowledge in modelling for forecasting and monitoring. The techniques used to analyze time series data can be categorized into statistical and machine learning techniques. It is easy to apply a statistical technique (e.g., Autoregressive Integrated Moving Average (ARIMA)) in order to analyze time series data. However, applying a genetic algorithm (GA) in learning a time series dataset is not an easy and straightforward task. This paper outlines and presents the development of GA that are used for analyzing and predicting short-term network traffic datasets. In this development, the mean squared error (MSE) is taken and computed as the fitness function of the proposed GA based prediction task. The results obtained will be compared with the performance of one of the statistical techniques called ARIMA. This paper is concluded by recommending some future works that can be applied in order to improve the prediction accuracy.

Keywords: time series, network traffic, forecasting, GA, mean squared error (MSE).

047: Fuzzy-based Framework for the Selection of Image Processing Software for Diagnosis and Outcome Prediction of Cardiac Diseases

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Abstract: Upsurge of mortality rate caused by cardiac diseases can possibly be decreased by diagnosing dysfunctions in coronary arteries. Evolution of technology has increased the number of image processing software to aid researchers in analyzing risks of developing heart diseases. Although there are numerous cardiac image processing software available, the task of comparing and selecting the most appropriate software which fits the motive of researchers is indeed a tough process. To the extent of our knowledge, although several studies are exposed into evaluation of health care systems or generic software, no work had been done on evaluation and selection of image processing software for heart diseases. Selection of inappropriate image processing software can adversely influence the results of the heart disease diagnosis and outcome prediction. The task of selecting cardiac image software becomes complex due to difficulty in understanding the functionality, applicability, and quality of the image processing software. In this work, we are interested to propose a framework which incorporates fuzzy-based techniques to evaluate cardiac imaging software available in the market. The proposed framework takes into consideration several categories of image processing software criteria, essential to process cardiac images for cardiac disease analysis and outcome prediction. Fuzzy techniques used in this work regulate the software evaluation procedure by aggregating ratings by researchers, for each criterion identified against alternatives, to highlight the most appropriate software for a particular processing task. This study contributes to overcome problems and inaccuracy in conventional methods of selecting a cardiac image processing software for diagnosis and outcome prediction of heart diseases.

Keywords: Software Selection, Multi-criteria Decision Making, Fuzzy Logic, Cardiac Image Processing Software

080: Automatic Text Summarization: Soft Computing Based Approaches

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Abstract: In this fast moving world, digital publications such as online text articles or documents can be easily searched and obtained via the Internet. However, the most important issue is how to digest this information and provide them to the readers in a concise form. Many researchers have conducted studies on automatic text summarization and various approaches have been proposed to improve the quality of summary. In this paper, a study on how soft computing based approaches have been used to improve automatic text summarization. The commonly used soft computing approaches in text summarization are discussed, namely neural network based method, fuzzy logic based method, evolutionary computing based method and Bayesian statistics based method. Besides the general idea and concepts of each method, the benefits and limitations concerning these methods are identified. At the end of this paper, a hybrid soft computing approach for text summarization is proposed.

Keywords: Text Summarization, Extraction, Soft Computing.

055: Detection of NS1 from SERS Spectra of Adulterated Saliva Using ANN

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Abstract: The Artificial Neural Network (ANN) has shown its strong capability in pattern recognition, classification and function approximation problems. In this paper, the ANN was used to distinguish the Surface Enhanced Raman Spectroscopy (SERS) spectra of saliva and saliva adulterated with Non-structural protein 1 (NS1). The saliva sample was illuminated with laser 785 nm source. A total of 128 spectra containing 1801 Raman shifts for each spectrum were analyzed. The performance of the different learning algorithms, i.e. Levenbergh Marquardt (LM), Scale Conjugate Gradient (SCG), Resilient Backpropagation (RPROP) and One Step Secant (OSS) were investigated and compared in term of accuracy, precision, sensitivity, specificity and kappa. The best performance is found with SCG learning algorithm, which attained 100% for accuracy, precision, sensitivity, specificity, and the best value of kappa of 1.

Keywords: Non-structural protein 1 (NS1), Raman Spectroscopy and Artificial Neural Network (ANN)

056: A Contactless Rotation-Invariant Palm Vein Recognition System

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Abstract: There is a high demand for contactless biometrics due to social concern for more convenient and hygienic technology. However, contactless biometrics like palm vein recognition faces a number of challenges. Hand rotation is among the main challenges to be solved. A number of methods have been introduced to extract palm region of interest (ROI) and have reported high accuracy, but the maximum rotation that can be handled by the methods are never mentioned. Usually, the ROI detection method fails to work if a large rotation exists in the hand position. In this paper, we propose a rotation-invariant method that can detect a palm ROI in any rotation angles. The method can sustain the recognition accuracy despite a substantial hand rotation of up to 360°. ROI detection in different angles causes minor ROI dislocation, thus a feature extraction technique called Winner-Take-All hashing (WTA) is developed. WTA serves as a feature enhancer, and is equipped with the Fisher's Discriminant criterion to obtain a discriminative representation from the palm ROI. Experiment result shows that the proposed method is able to achieve a maximum recall of 94% and an EER at 7.12% for a challenging scenario containing hand rotation of up to 360°.

Keywords: Biometrics, palm vein, ROI extraction, image processing, feature extraction, winner-take-all hashing

064: Ensemble Prediction of Enhancers Associated Marks Using K-mer Feature

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Abstract: Epigenetic marks like chromatin remodelers and histone marks are eminent indicator of enhancers' activity. K-mer is a simple representation of DNA sequences that has been useful for computational epigenetic marks prediction. While many studies have been utilizing k-mer as feature of epigenetic marks prediction, no comprehensive studies have been done to show sophistication of k-mers feature of epigenetic sequences with learning models. This study performs a comprehensive evaluation of diverse learning models using k-mer feature to draw comparison between different learning models and employs blended ensemble learning technique to improve overall performance. Our results show that each learning model ranked quite differently the important of different k-mers for discriminative purpose. The blended ensemble increases the performance of enhancer classification significantly compared with using individual classifiers.

Keywords: Enhancers Motifs, Epigenetic Marks, K-mer, Model Prediction, Blended Model.

027: Competitive Intelligence Awareness in Creative Multimedia Industry in Malaysia

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Abstract: Competitive Intelligence is gathering and analyzing of information from open sources. The organization uses these analyses to make better strategic decisions; also Competitive Intelligence helps the companies to know more about themselves and their competitors. Competitive Intelligence helps the companies to improve their decision making and strategy building; essentially it help the organizations to improve their productivity and efficiency leading to greater profits. Organizations operating in different clusters of industry need CI to grow and survive in the fast growing and everyday changing industry. One particular example could be creative multimedia industries, this industry similar to other industries is recently exposed to competitive intelligence and its benefits so more research and development is required to fully utilize competitive intelligence in multimedia industry.

Keywords: Competitive intelligence (CI), Creative Multimedia

035: Partial Least Squares-based Incremental PCA for Robust Human Detection and Tracking

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Abstract: Human tracking is a major issue in computer vision where the challenging part is to track a subject under an uncontrolled environment. Most of the existing algorithms are not able to perform well in such condition due to variation in the human appearance caused by covariates like clothing and the illumination changes. One reason these algorithms fail to perform well is because of the use of a fixed appearance model for the human object. The fixed model is limited and insufficient to cope with the constant appearance change in the image stream. Overtime, the tracking result will be drifted away from the trajectory and lost track of the actual target. In this paper, a method coined as Partial Least Squares-based Incremental PCA (PI-PCA) is proposed to address the human detection and tracking problem. A human detection method based on partial least squares (PLS) regression is used to locate the occurrence of a human subject in the video frame. Once a human object is detected, incremental PCA will be used to track this subject over the video stream. A forgetting factor is used to follow the tracking history. Once the sign of a drift is detected, PLS will be called to correct and re-lock the actual position of the target object. The proposed method is an improvement over the existing incremental learning algorithms as it introduces a corrective mechanism in the tracking process. Empirical tests demonstrate that the proposed PI-PCA method adapts well to appearance change of the human object over a long video stream with substantial motion switch.

Keywords: Human detection, Human tracking, Incremental PCA, Partial Least Squares Regression

038: Data Extraction Formulation for Efficient Data Synchronization between Mobile Databases and Server-side Database

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Abstract: Big data volume coupled with affordable small electronic devices with faster processing speed and reasonable amount of memory have engendered higher demand in accessing corporate information from anywhere. Considering the limitations of mobile devices such as CPU, memory and bandwidth, it is important to seek a solution that can address these limited capacities. In this paper, a formula is devised for minimizing the usage of these resources for data synchronization between the mobile devices and the server. Experimental approach (exploratory and confirmatory) is deployed to achieve this goal. A synchronization log was created on the mobile device to save the status of the synch process. Numbers of staging areas are reduced from 4 to 2. The formula was empirically validated in a real-life context. Results obtained indicate a profound improvement in the utilization of mobile resources and data transmission speed.

Keywords: Mobile Databases; Synchronization; Mobile Devices; Data Extraction Formula.

040: Synergy Network Inference Model Based on Heterogeneous Data Integration

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Abstract: Deoxyribonucleic acid (DNA) microarray is one of the most fascinating technologies in molecular biology, which has been used to measure thousands of genes simultaneously. To date, many researchers have agreed that the dawn of “genomic age” has begun and numerous works have been conducted to enlighten the cellular mechanism in the term of Gene Regulatory Network (GRN). However, there are still deficiencies in fully utilizing microarray data for diagnosis, prognosis and treatment of disease. Microarray data only presents partly independent and insufficient complementary information regarding the view of the whole biological system. Therefore, integrating data from different sources and data type plays an important role in current studies to gain a broad interdisciplinary view of cancer progression. As a result, this study aims to combine different types of data, namely clinical and GRN to infer the progression of breast cancer by developing a synergy network based inference model. The results have shown that this model can further improve the ability of classifier to correctly group patients into its corresponding classes, compare to the used of single data type.

Keywords: Microarray, Gene Regulatory Network (GRN), Bayesian Network, Data Integration

043: Personal Information Management: Evaluation of the PHOTO REFINDER System

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Abstract: Although many innovative personal photograph management systems have been designed and published, little existing works have focused on their evaluation, partly because the evaluation in Personal Information Management (PIM) context is difficult. PIM is the domain which involves methods and procedures to study how people keep, manage, maintain and re-find information. In this research, a low-cost evaluation technique has been adopted from a Human Computer Interaction (HCI) domain to find usability problems in a new designed system called PHOTO REFINDER. The aim of this paper is to involve users at the early design stage which helps to refine the system. The experiment is conducted with expert users at the Universiti Kebangsaan Malaysia. The method of evaluation shows that most features in PIM processes have attained a good rate of satisfaction while few other features have not. These results can serve as a guidance for the next iterative design which could support end-users to perform their daily tasks better.

Keywords: Personal Information Management, Evaluation, Personal Photographs, PHOTO REFINDER.

045: Managing Complexity: Online Supervisor Matching Service (O-SMS) for Research Postgraduate Students in Malaysia

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Abstract: Finding a suitable supervisor is important for the success of getting a postgraduate degree. So as getting a suitable student to conduct a research project. In order to manage the complexity of getting a suitable supervisor, a survey has been conducted to solicit the criteria in choosing a supervisor. A total of 104 responses were obtained and seven criteria were identified to be the students' expectations when looking for a suitable supervisor. Eventually an online supervisor matching service, O-SMS for potential research student is proposed. It is a web-based system using collaborative filtering technique as the recommendation system. While the O-SMS is developed based on the criteria of students' point of view, potential supervisors too will have the benefits of selecting the suitable student to supervise and assist on research grants.

Keywords: Web-based system, matching service, supervisor search

057: The Use of Rakan Keselamatan (RK) System to Facilitate Campus Community in Reporting Incidents

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Abstract: This paper introduces a Rakan Keselamatan System that consists of RK mobile application and RK reporting software to facilitate Universiti Teknikal Malaysia Melaka (UTeM) campus community in reporting incident. Rakan Keselamatan (RK) was developed for android-based mobile electronic devices (smartphones) and web application. Campus community will report an incident such as accident, robbery, traffic congestions, emergency, vandalism or others by using RK mobile application. The data will be sent instantly to the RK reporting software where a Polis Bantuan officer will take an action. A feedback will be send to RK mobile application to inform user about their status of report. RK mobile application allows campus community to send rich information as a report (text of detail incident, GPS location, date, time, and pictures). This paper describes RK mobile application and RK reporting software to facilitate campus community in reporting incidents.

Keywords: mobile accessibility, panic situation, emergency services, mobile application

093: A GQM-based method to support elicitation of sustainability requirements for mobile applications

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Abstract: The demand to develop sustainable mobile applications is getting higher to meet the fast changing mobile technology. Eliciting the right sustainability requirements has been identified as one of the major tasks to produce sustainable and green mobile applications. However, the elicitation process is very challenging because sustainability is not treated and considered as a first-class quality like other quality attributes such as safety and security. In recent studies, several methods have been developed to achieve sustainability in software. However, there is still lack of approaches in the area of software engineering that can be used to elicit the sustainability requirements for green mobile applications. To design a sustainable and energy-efficient mobile application that will give a positive impact on productivity, it is necessary to carefully elicit and specify sustainability requirements. This research aims to provide a method to elicit sustainability requirements towards green mobile application design based on Goal Question Metric (GQM) approach. A case example has been used to validate the feasibility of the proposed elicitation method. The case example reveals that it is feasible for software engineers to apply this approach for eliciting sustainability requirements for native, hybrid and web application.

Keywords: Sustainability Requirements, Requirements Elicitation, GQM, Mobile Applications.

037: Review on Generic Components of the MMORPGs

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Abstract: The massively multiplayer online role-playing games (MMORPGs) have grown to be an interesting emergence since 1980s and rapidly mature into an essential cultural element of the civilization today. The MMORPGs are cross-generational with players coming from kids to adults into the age of 70s. They are cross-cultural with players coming from different societies, different languages and different cultural traditions. They are also cross-genres with titles ranging from science fiction fantasy, mythology, sword and sorcery, crime fiction, romance to serious professional practices drawing inspiration from comics, novels, occults etc. The extraordinarily good reception of these games prompted for this study on what makes these games so addictive, influential and even corruptive. More interestingly, given that all these games come with complicated structures, the study attempts to discover the factors that make these difficult knowledge transfer process so appealing to the gamers that they are able to scale up the steep learning curve to finally completing these difficult games successfully, and loving it.

Keywords: MMORPG, Computer Game, Game-based Learning.

039: Developing Reflex-Based Agent with Unity3D Game Engine

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Abstract: An agent is an autonomous entity that perceives its environments, and upon that input, responded with actions accordingly. A common trend in developing agent is through object-oriented programming (OOP). This study explores the possibility of developing agent with a game engine, namely Unity3D, which can navigate within a partially observable environment, with the purpose to enhance the simulation of real-world situation, i.e. egress simulation. Testing and simulation of the model proves that the agent is capable enough to navigate such environment explicitly. This paper describes the development and the mechanism of the simulation model.

Keywords: Intelligent Agent, Reflex-Based Agent, Game Engine, Simulation

097: The State of Art Heuristic Pathfinding in Games

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Abstract: Pathfinding is fundamental to Artificial Intelligence and necessary for agent movement in games industry. The most common problem in pathfinding is to find the shortest path. This issue has been attracted researchers for the past few decades to put effort to come out with various solutions. In recent years, there has been an increasing interest in pathfinding in games. Several attempts and solutions have been made to solve the problem. However, pathfinding solution is often computationally expensive and consume a significant amount of resources especially in real time games. Various pathfinding algorithm have been introduced such as Depth First Search, Dijkstra, Breadth First Search and A* algorithm. Pathfinding can be divided roughly into two categories which are non-heuristic and heuristic. More recently, literature has emerged that offers findings about heuristic in pathfinding. Heuristic search algorithm is faster and more efficient than traditional search methods in finding shortest path. This paper focus on development and improvements heuristic search algorithm in existing pathfinding in games. The aim of this paper is to provide researchers with heuristic algorithms and summarize the map representation in games. Thus, throughout this paper, a highlight on pathfinding algorithm used in games and a review on heuristic pathfinding will be discussed accordingly.

Keywords: Pathfinding, Heuristic, Shortest Path.

008: A Review on Taxonomy of Malware Analysis Studies

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Abstract: This paper discusses taxonomy of malware studies from various literatures. Based on the literatures, it is known that malware analysis studies are divided into system-level (host) and network-level studies. Each of this is subdivided into two analysis methods which are signature and behavioral. Various methods are discussed under each classified methods. This paper also tabulates features selection approaches and evaluation techniques and finally a general malware analysis framework which consists of feature selection phase, analysis method phase, and evaluation phase is drawn.

Keywords: Taxonomy, Malware Analysis, Behavioral.

113: Multi Label Classification on Multi Resident in Smart Home using Classifier Chains

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Abstract: Rapid development in smart home environment are driven by the development of computing and sensing technology, has been changing the landscape of home resident's daily life. Among others, activity recognition has become an interesting area of exploration in the domain of smart home. Activity recognition describes the paradigm of obtaining raw sensor data as inputs and predicting a home resident's activity accordingly consist from environmental-based sensors that are embedded into the environment. The recognized patterns are based on Activity of Daily Living (ADL). In this paper, we design a multi label classification framework to cater multi resident in smart home environment using Classifier Chains approach. Human activities, everyday are gradually becoming complex especially relating with multi resident requirement and thus complicate the inferences of activities in smart home. Hence, this paper will highlight the methodology of sensing technology involved as well as important research works done in activity recognition area specifically on multi resident complex activity recognition involving interaction activity of multi resident within the same environment. Furthermore, this paper also discussed potential directions for future research in the activity recognition.

Keywords: Complex activity recognition, smart home sensor, multi label classification, multi resident, Classifier Chains.

125: Object Detection Framework for Multiclass Food Object Localization and Classification

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Abstract: Detecting the instances of an object-class is a very important and crucial task in computer vision system prior to obtaining any further information. To determine the location of the object instances possess several challenges resulted from the object and image variations. In this paper, we propose a recognition framework for multiclass object detection to localize and classify the food objects to address the problem of searching multiclass objects. A typical food object, to compare to the other objects has non-rigid deformation and suffers from very large intra-class variance and too little inter-class similarities. To strive a better recognition performance while designing this framework, the optimal food recognition components comprising localization, feature extraction and classification strategy were discovered through a literature review. Besides that, the problems that are still remaining in this area critically discussed along with research direction that should be put into concentration for the future research.

Keywords: Object Detection, Food Object Detection, Multiclass object detection, image classification

068: Labeling-Based Hybrid XML Fragmentation Model

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Abstract: Fragmentation has become one of the options for distributed design to handle large volume of XML data. There are several fragmentation models and techniques. However, there are some improvements which can be made to enhance the efficiency in retrieving fragmented XML data. The performance of distributed query is not merely affected by how well the query algorithm works but also depends on how well the XML data is fragmented. We have proposed a hybrid fragmentation model with structure and size-based fragmentation technique named number addressing to improve the distributed query performance. In addition, we compare our proposed method to other structure and size-based fragmentation techniques.

Keywords: XML Database, Distributed Design, Fragmentation Distributed XML, Partitioning, Labeling Scheme.

077: A Review on utilising XML as the mediated layer for data integration

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Abstract: Data integration is crucial to establish a good solution for combining heterogeneous data sources to enable users access these sources through a unified view. XML technology has powerful features to exchange, integrate and store complex data into data warehouse actively by communicating with structured, semi-structured and unstructured data. In addition, web-based systems and XML data integration approach facilitate real-time integration for better data analysis and keeping data updated. This paper reviews the latest approaches for integrating heterogeneous data sources through XML technology as a mediated layer. In addition, we suggest the grouping of these approaches, and more importantly gives insights on the future direction for data integration.

Keywords: Data warehouse, Data integration, XML technology, Web data management, Heterogeneous data sources

087: An Effective Distributed Framework for XML Query Processing

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Abstract: With the growing demand for data scalability and accessibility over the network, XML data management has been given great attention. Due to this reason, distribution of XML data is the best solution to support faster query processing rather than centralized solution. In conjunction with this, the need for optimum data fragmentation and distribution techniques were crucial to avoid accessing irrelevant data in the database. Alongside, the technique to process queries over fragmented XML data is still an open challenge since elements in an XML document are semi-structurally associated. It is vital for the structural properties in the original XML document to be preserved before the document is fragmented so that, data distribution and query processing can be performed at the best speed. In this paper, we propose a framework to process queries over fragmented data using a region-based labeling scheme for structural relationship determination.

Keywords: Data Fragmentation, XML Labeling, Query Processing, Distributed XML Database, Distribution Framework

088: Computational Model of Situation Awareness for Decision Making in Driving

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Abstract: Driving is defined as a process of moving from one destination to another with the main aim to get to the destination safely. There are existing computational models of situation awareness in various domains, however, none has been considered in driving domain. This study proposes a computational, situation awareness model to assist drivers in effective decision-making. The model incorporates dynamic factors based cognitive and psychology theories that will influence decision- making in driving domain. To illustrate the proposed model, simulation scenarios based on overtaking maneuvers have been conducted. The experimental results show that the external factors attention and expectation have effects on the safe and risky driving behavior and by suggestion on the driver's confidence level to perform the overtaken maneuvers. Moreover, this model has been verified using an automated verification tool by checking its traces with the existing results from the literature.

Keywords: Computational Models, Situation Awareness Models, Decision Making, Driving

098: Z Analyzer: Design Development of a Power Optimization Software Tool for Smart City Building Services

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Abstract: In this paper, a simulation tool was developed to calculate the current energy practices of the building services of a building and derived optimization methods for each services. The extent of this research covers major building services such as illumination, Air-Handling Unit (AHU), and heating elements by proposing various improvement methods for the services with today's available technology. The simulation tool, with an intuitive graphical user-interface(GUI) acquire current practice of the services via user input on a room-by-room analysis and calculates each room for its power consumption and monthly energy usage, improved power consumption and energy usage, cost savings, Carbon reduction, optimization cost , and the return on investment (ROI). This simulation tool could generate results in the form of graphs and spreadsheet based on the tabulated services both for the current and optimized service practices selected.

Keywords: Power Optimization, Building Services, Software Utilization for Analysis

049: A Multimedia content recommender system using Table of Contents and content-based filtering

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Abstract: In recent years, we have witnessed a rapid growth in the availability of digital multimedia on various application platforms and domains. Consequently, the problem of information overload has become more and more serious which causes a difficulty and time consuming for the users to locate and discovers the desired data. In this paper, we propose an architecture of a Multimedia Recommender system for Education videos that recommends relevant videos to the user based on Content-Based Filtering and the Table of Content of relevant books, that in turn will increase the dynamism and accuracy of the recommended multimedia data of their preference, preventing them from consuming time and effort in locating the desired video.

Keywords: Content-based recommender system, Difficulty level, Video Sequencing, Table of Content, Victor space mod

050: Impact of the Mobility Management Protocols on the Handover Performance Assessment under Real-Time Video Steaming Network

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Abstract: In recent years, wireless networks have evolved tremendously especially in heterogeneous systems in order to effectively and efficiently support multiple access technologies. Heterogeneous networks will be paramount in the next generation wireless networks where devices are able to roam under various radio access technologies that lead to utilization of an IP-based core network. With the increasing accessibility and performance of different radio access technologies which are WiMAX (Worldwide Interoperability for Microwave Access), Wi-Fi (Wireless Fidelity) and UMTS (Universal Mobile Telecommunications System) have stimulated the mobile users towards increased of utilization. In such network, it is imperative for handovers between networks in order to maintain the seamless connectivity and a satisfactory quality of service for mobile users. Therefore, providing the quality of service (QoS) and seamless handover processes is one of the major matters for real-time services. This paper proposes a unified handover scheme to reduce the latency period of vertical handover during the video transmission. The proposed scheme is evaluated based simulation work on the handover performance under real-time video streaming networks.

Keywords: Proxy Mobile IPv6, Media Independent Handover, Video Transmission, Handover Performance.

036: Adoption of Runtime Quality of Service in Genetic Algorithm on Memory-equipped Service-Oriented Architecture

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Abstract: Due to the dynamic nature of service-oriented architecture (SOA), it is a challenging task to predict times. Such systems need to re-configure their SOAs so as to match the requirements of environmental changes. It is impractical to design time-limited dynamic systems without imposing bounds and constraints on their structure and operation. Under the new framework, the agents contributing to the management of SOA processes were structured based on a logical procedure. According to the environmental variables, the agents organize the composition of services with regard to the time limits. The QWV refers to weighted qualitative dynamic features indicating the user priority, while QF refers to the runtime quality of service initialized under this framework. Both factors are involved in development of a composite web service in genetic algorithm (GA). The applied case of E-stores was implemented by this framework on the standard dataset. The results showed this framework can be helpful in automatic generation of required services, while responding to all concerns simultaneously. The adoption of agents alongside GA within the new framework enhance the response time, user satisfaction and overall system performance

Keywords: Service-oriented architecture, process management, multi-agent systems.

060: Users' Mental Model Pattern for User Interface Design of Mobile Shopping Apps

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Abstract: In recent years the emergence of smartphones has changed the definition of mobile phones. It has become an essential part of the peoples' communication and daily life. Mobile apps have become more popular nowadays with the emergence of smartphones. Mobile app is application software designed to run on perspicacious phones and tablet computers. Shopping apps are now the fastest growing apps among mobile apps. Mobile user interface design (UID) is an essential in the mobile apps development process. A poor user interaction in mobile apps could lead to failure of an app. The used of mental model theory could help the mobile apps developers to design a greater user interface (UI). This study discussed on how mental model theory implemented in interface design practices for a mobile shopping app development. Mental model theory using 'Localization' and content analysis method will be used throughout this research study. The expected output of this research is to develop a fast, user-friendly and strong visual hierarchy interface guideline for a UID of mobile shopping apps. According to this study, different gender had a different mental model on the user interface for a mobile shopping app.

Keywords: Mental model pattern, User Interface design, User interaction, Mobile application

076: Crowdsourcing Platform: A Review for Governing Operating Model

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Abstract: In recent years, the emergence of crowdsourcing platform as a mediator in managing the intersection of business organization and human workforce via the Internet has paved way for business process to spur globally as it requires minimal cost expenditure and faster. However, due to its vast concept and applied in various directions and fields in research, it has led to an obscure limit. Hence, many believe that there are many opportunities still remain undiscovered. This paper aims to gain a better understanding of the governing operating model in crowdsourcing from the perspective of Information Communication and Technology and business process. We conducted a review and analyses of previous studies related to crowdsourcing platforms. Specifically, this paper deliberates on the main components in such model then analyzed the intersection between each component in order to facilitate dynamic changes in crowdsourcing operating platform. With such discovery, the governing operating model of crowdsourcing platform is hopefully can be further enhanced in the near future.

Keywords: Crowdsourcing platform; tasks structure; crowd-sourced process;

078: On Leveraging the Use of Case Studies to Recommend Design Methods: From the Perspective of Human-Centered Design Methodology

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Abstract: Case studies are commonly used to recommend design methods. In this paper, we investigate the state of the art guidelines on Human Centered Design method usage and identified the challenges the design team might face. Recent works on design method recommendation of Human-Centered Design methodology were examined from the perspective of case representation, utilization of cases to categorize methods and cases, and making recommendations. We identify the need to use richer case description for problem formulation, abstraction and case categorization, to use demographic data and propose to create a design methodology specific ontology to aid the recommendation process during design.

Keywords: Human-Centered Design, design method, recommender system, case representation.

079: McCabe's Complexity and CK Metrics on the Internal Quality of Test First Implementation in Malaysian Education Settings

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Abstract: Test first is promoted in test driven development method as one of an effective Agile manifesto in producing a better quality applications. Several research have been conducted in education settings and among industrial practitioners in order to investigate the test first contribution in producing better quality software compared to a traditional approach. This paper focuses on studying the internal quality of the project developed by undergraduates with the implementation of test first over test last approach in Malaysian education settings. In the analyses, JHawk is used as the metrics extraction tools, and the analysis utilized the SPSS and G*Power statistical packages. The metrics collected are based on six object oriented metrics by Chidamber and Kemerer (CK) and the McCabe's cyclomatic complexity (CC). However, only four CK Metric (Lack of Cohesion in Method, Coupling between Objects, Weighted Methods per Class, and Response for a Class) were evaluated, in addition, the complexity is measured based on McCabes's CC. The outcome based on t-test and Mann-Whitney test shows that none of the metrics is statistically significant for test first in producing better internal quality; however, the hypothesis is accepted due to the effect size and achieved power contributed by the Weighted Method per Class.

Keywords: test first, test last, internal quality, CK metrics, McCabe's cyclomatic complexity

089: Cost-Benefit Analysis Reference Framework for Human Motion Capture and Analysis Systems

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Abstract: Athlete performance motion analysis was mostly qualitative in nature in the last two decades. However, computerized human motion analysis for athlete are becoming more prevalent with the recent advancement of technology which is related to input acquisition sensor, computer hardware, and algorithms. In this study, a novel cost-benefit analysis reference framework is proposed to evaluate the strength and tradeoff of various human motion capture and analysis systems in terms of cost, ease of implementation and expected results. The framework also helps us to determine the most suitable candidate technology for a real badminton coaching case study. The study reveals that the consumer grade markerless based technology is the most feasible given its strength in low startup and operating cost, minimal configuration, portability albeit with some compromise in result accuracy. Furthermore, the evaluation reference framework will benefit practitioners and researchers alike in sports biomechanics.

Keywords: Sports Biomechanics, Human Motion Capture and Analysis, Badminton, Markerless

053: Lossy Image Compression based on Vector Quantization using Artificial Bee Colony and Genetic Algorithms

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Abstract: In recent years, the volume of image data that are being employed for Internet and other applications has been increasing at an enormous rate. To cope up with the existing limitations on the storage space and the network bandwidth, it has become necessary to develop more efficient compression techniques. Lossy compression is more popular compared to lossless compression as it is more widely used in a variety of applications. In lossy compression, it is necessary to maintain the quality of the reconstructed image when the compression scheme is applied. Thus, compression ratio and the reconstructed image quality are the two important parameters based on which the performance of a lossy compression scheme is judged. In this paper, a new lossy compression scheme is proposed which employs codebook concept. For the generation of the codebook, a new technique denoted as ABC-GA technique which is a combination of artificial bee colony and genetic algorithms is employed. The performance of the proposed compression scheme is evaluated using two different types of databases, namely, CLEF med 2009 and standard images (Lena, Barbara etc.). The experimental results show that the proposed technique performs better than the existing algorithms yielding average PSNR values of 43.05, 41.58, 40.06, 37.41, 35.24 for compression ratios 10, 20, 40, 60, 80 respectively in the case of standard images.

Keywords: Lossy compression, Code Book, Vector Quantization, Artificial Bee Colony Algorithm and Genetic Algorithm.

110: Hybrid of Ant Colony Optimization-ANN for User Modeling System

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Abstract: Effective adaptive web based learning environment requires an efficient user modelling system (UMS). The machine learning algorithms, the educational hypermedia object models and the user modeling approaches are crucial elements for UMS. UMS is used to evaluate the stored data and classify the student's knowledge. The most important element in automated UMS is the correct usage of classifier and algorithm in optimizing the user interaction with the system. This has encouraged researchers to dedicate more research on the UMS so that more effective online based learning environment can be developed. In this study, the ant colony optimization (ACO) and feed-forward artificial neural network (ANN) are used to evaluate user interaction frequencies in the web-based learning environment. It can improve the classification accuracy of instance-based user modelling approach. The algorithm is tested with given datasets. The results obtained indicated that the proposed algorithms achieve better error rates performance and is consider suitable to be applied for all cases of automated UMS of online web-based learning environment.

Keywords: User Modelling System, Ant Colony Optimization, Artificial Neural Network, Machine Learning Algorithm.

069: Performance evaluation of metaheuristic algorithm on gpu-based system

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Abstract: The harmony search (HS) algorithm is a relatively new population-based metaheuristic optimization algorithm. It imitates the music improvisation process where musicians improvise their instruments' pitch by searching for a perfect state of harmony. There is no guarantee to find the best or optimal solution, though it might be a better or improved solution than predicted guess. Most of metaheuristic algorithms including HS are executed in CPU that provides a sequential environment for programming. However, the performance of HS is degrading when it comes to big data. Hence, this study proposes the enhancement of HS algorithm by implementing on a parallel environment of Graphic Processing Unit (GPU) for Ndimensional harmony search memory. The methodologies involve the execution of standard mathematical functions in both CPU and GPU platform. The input data from CPU memory is copied to GPU memory. The parallel program in CPU is loaded into the GPU and the data in the GPU memory is used to execute the program accordingly. The results from GPU memory are copied to the CPU. These results are measured in terms of computational time for each mathematical function between the CPU and the GPU. The findings has revealed that the computational time of HS algorithm was significantly faster by using GPU compared to CPU with big dimension of the harmony memory accordingly.

Keywords: harmony search (HS) algorithm; CPU; GPU; mathematical function; CUDA programming;

073: Optimized Automated Baseline Correction for NS1 Adulterated Salivary Raman Spectra

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Abstract: Non-structural protein 1 (NS1) is a biomarker for flavivirus infection related diseases. NS1 protein feature can be captured using Surface Enhanced Raman spectroscopy (SERS) technique. SERS spectra of NS1 produced a significant NS1 characteristic peak at 1000cm⁻¹ Raman shift. However, as the concentration of NS1 reduced, the intensity of the peak is reduced producing low signal to noise ratio (SNR) spectra. In addition, the spectra is also interfered with the baseline drift originated from fluorescence effect produced by the protein itself. Baseline drift is a common unwanted feature of a Raman spectrum and removing it will improve the spectra quality for visual inspection or automated classification. In this study, baseline drift of Raman spectra exhibiting low intensity of NS1 peak is removed using Piecewise Cubic Hermite (PCH) interpolation technique in Matlab environment. Systematic tuning of window size and step size is performed to obtain the optimum baseline removal parameter removing the baseline drift while preserving the characteristic of NS1. By observing the value of SNR and NS1 characteristic peak intensity, I_{max}, the optimum window size and step size identified to be 40 and 9, respectively.

Keywords: Baseline removal, Raman spectroscopy, NS1 protein, flavivirus.

014: An Agent-Based Modeling for a Reader's Cognitive Load and Performance

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Abstract: Reading performance and cognitive load play an important role to facilitate learners to learn, memorize, and understand a novel piece of information. The cognitive demands of the reading tasks for solving complicated problems, when using poor learning materials, or in a distraction condition such as noise or interruptions, can have a significant impact on reading performance. These conditions can impair the reading performance, and may thus deter effective learning experience. In this paper, an agent computational model is proposed. Different types of relations between extraneous, intrinsic, and germane loads were used to analyze the reader's performance over time. Simulation experiments under different conditions and parameters setting showed that the model is able to produce realistic behaviour when tested on different types of personalities and conditions. Through mathematical analysis, the equilibria of the model was determined.

Keywords: Reading Performance, Cognitive Load Theory, Agent-based Modeling, Simulation.

092: Analogical-based Translation Hypothesis Derivation with Structural Semantics for English to Malay Example-based Machine Translation

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Abstract: An analogical-based approach towards meaning preservation by transferring the source language meaning structure to the target language in the recombination process of an English to Malay Example-based Machine Translation system is presented. The meaning structure is built on top of the current synchronized translation examples pair representation with the incorporation of a layer of semantic annotation at the structural level. This meaning structure provides a consistent medium allowing the derivation of translation hypothesis using analogical-based approach throughout the automated translation process. The complexity of the structural transformation in the final recombination process is relaxed with this analogical-based derivation approach. The preliminary experiment demonstrates that the English to Malay automated translation is improved using the analogical-based approach. The best evaluation score is obtained using the Bilingual Evaluation Understudy1 metric, showing improvement of 37.06%.

Keywords: Example-based Machine Translation, Analogical-based, Semantic Annotation.

084: A Performance Neighborhood Distance (ndist) between K-Means and SOM Algorithms

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Abstract: Clustering is an important means of data mining based on separating data categories by similar features. This paper aims to compare the performance of neighborhood distance (ndist) between K-Means and Self-Organizing Maps (SOM) algorithms. The sample in this study is rainfall datasets, from 13 Stations in East Kalimantan. The performance of ndist was used Euclidean Distance. This paper outlines and presents the comparison performance of ndist of K-Means and SOM for analyzing and clustering rainfall datasets. The performances of these algorithms are compared based on the ndist values. The findings of this study indicated that the K-Means has been proved to be effective in ndist by using centroid concept better than SOM algorithm. This paper is concluded by recommending some future works that can be applied in order to improve the ndist of K-Means and SOM.

Keywords: Clustering, K-Means, Self-Organizing Maps, ndist, Rainfall.

102: Alzheimer Patient Detection using Bayesian Network Model

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Abstract: Caregivers and family members have been expected to be the primary people to give care and assistance to patients with Alzheimer Disease (AD). The cost and the stress are high, while the patients are encouraged to promote functional independence in order to remain related to the community. With the assistance of detecting these Alzheimer patients, functional independence among the patients can be promoted while the burden put on the caregivers and their family members is decreased. Various detection approaches have been proposed utilizing the Global Positioning System (GPS) and caregivers alerting systems, specially designed for Alzheimer patients with dementia or learning difficulties. However, current applications lack automation, which is crucial especially when tracking the Alzheimer patients especially when they wander about. By utilizing the Bayesian network (BN) classifier, the data collected from tracking the patient is evaluated and analyzed in order to estimate the probability of wandering. A constant age group with different conditions and environments of the patient are conducted to evaluate the proposed BN classifier as well as determine the possibility that a patient may wander. The proposed BN classifier was able to correctly output the expected results in 12 out of 13 test cases, which emphasizes the capability and accuracy of the proposed approach.

Keywords: Alzheimer Disease, Alzheimer Tracking, Bayesian Network.

103: Automatic Detection Method of Pipeline Anomalies on Caliper Data

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Abstract: Pipelines are the most efficient mode of transport for the global distribution network of oil and gas industry. Due to this, performing routine pipeline inspections to detect any critical damage is extremely important for offshore projects and also to the environment. In-line inspection (ILI) of a pipeline is the process of inspecting the condition of a pipeline. There are various types of tools that can be used to perform ILI services, namely Magnetic Flux Leakage (MFL), Multichannel Caliper, ultrasound, radio waves, and even inertial forces. This study focuses on data analysis methods collected by the Multichannel Caliper tool for anomalies detection. The Caliper tool is a mechanism that is used to measure the roundness of the internal pipeline to detect areas of crushing or other deformation. There are a number of companies available these days that offer pipeline inspection services. Most of them spend days to process a single data of the inspected pipeline. The results produced are sometimes inaccurate, inconsistent due to human carelessness, require a lot of human intervention, take a long time to analyze as well as certain parts of the data may fail to be noticed. In this study, an alternative to the manual analysis method has been developed. An application that has the ability to perform auto-detection of pipeline anomalies has been proposed. The accuracy and consistency of data of the inspected pipeline can be performed efficiently while taking the pipeline inspection job to an entirely different level.

Keywords: Pipeline Anomaly, Machine Learning, Fuzzy Logic

117: Co-Evolving Ensemble of Genetic Algorithm Classifier for Cancer Microarray Data Classification

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Abstract: Ensemble is the method that improves the efficiency of the classification task. In the traditional way, classifiers were built separately n times and combine to the ensemble with size n. It takes a lot of time especially in the Genetic Algorithm (GA) methodology. This paper presents the method to build the ensemble of GA classifier that processed by GA technique. The experimental results showed that the proposed method gave better classification accuracy with less time consumed in processing comparing with the traditional one.

Keywords: Ensemble Method, Data Classification, Genetic Algorithm.

122: Imbalance classification model for churn prediction

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Abstract: Churn prediction deals with challenging problem of detecting customers who probably cancel a subscription to a service. Data mining techniques such as decision tree, logistic regression, neural network are very successful in prediction customer churn. However, the prediction accuracy of these classification techniques reduces when handling with class-imbalanced data. Class-imbalanced data are common in the field of Churn prediction, mainly one or some of the classes have much more instances samples in comparison to the others. Classification techniques for imbalanced datasets usually correctly predict the results for the majority class, but do not perform well to predict results for the minority class. In this paper, we propose SMOTEBagging, which combines SMOTE sampling technique with Bagging algorithm to enhance the classification model to predict results for the minority class. The classification performance is obtained via 5-fold cross validation. The experimental results show the effectiveness of SMOTEBagging technique.

Keywords: Churn prediction, Class imbalance, SMOTEBagging, Ensemble

107: Prediction of Housing Price Index in Malaysia using Optimized Artificial Neural Network

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Abstract: The rapid economic improvement in Malaysia has resulted in an increase of housing prices. This trend has become a serious concern for people who want to buy houses, making many of them want to know how prices will shape up in the future in order to help them in the decision-making process and determine the appropriate policies. In this paper, the Artificial Neural Network (ANN) was studied to improve the reliability of prediction information. The Firefly Algorithm (FA) was used to optimize and improve the structure of ANN, resulting in a hybrid called FANN. The Gross Domestic Product (GDP), Population Rate (PR) and Inflation Rate (CPI) were chosen as independent variables that have a strong effect on Malaysian Housing Price Index (MHPI). The MHPI of four types of houses (Terraced, High-Rise, Detached and Semi-Detached houses) was chosen as the dependent variable. Yearly time-series datasets from 2003 to 2014 were used to train and test the proposed model. The results of FANN were compared to GANN (ANN optimization with genetic algorithm) using the same datasets. The FANN model presented a lower mean squared error (MSE) rate in training, validation and testing processes in the majority of the datasets of MHPI. This proves that FANN has an effective ability to be applied in housing price prediction.

Keywords: Artificial Neural Network, Firefly algorithm, Time series prediction, Malaysian House Price Index.

090: Development of MCU Architecture for IoT-based System

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Abstract: The wide spread of the IoT-based system nowadays relies on the advancement of the embedded electronics that process the data from the components of IOT-based system such as sensors, actuators and network connectivity. The embedded electronics such as microcontroller unit (MCU) is the heart for the IoT-based system that mainly performs the data processing. This paper discusses the requirements for developing MCU architecture. The security is added as an emerging important requirement and its importance is demonstrated by hardwiring the MPU block as the compulsory block in MCU architecture and is depicted through the Krutchen's 4+1 views.

Keywords: Krutchen's 4+1; MCU architecture; IoT-based system; Security

085: GeoTravel: Harvesting Ambient Geographic Footprints from GPS Trajectories

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Abstract: This study is about harvesting point of interest from Global Positioning System (GPS) trajectories. Trajectories are the paths that moving objects follow through space in a function of time while GPS trajectories generally are point-sequences with geographic coordinates, time stamp, speed and heading. User can get information from GPS enable device. For example, user can acquire present location, search the information around them and design driving routes to a destination and thus design travel itineraries. By sharing GPS logs among each other, people are able to find some places that attract them from other user's travel route. Analysis on the GPS logs can get the point of interest that is popular and interesting. By presenting the point of interest, user can choose travel place easily and the travel itineraries is planned based on the user preferences.

Keywords: GPS Trajectories, Travel Itineraries, User Preferences.

086: Measuring Instrument Constructs for Knowledge Management System Governance Using Rasch Measurement Model

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Abstract: Knowledge management system (KMS) has become an important asset to the organisation. KMS acting as a tool in supporting organisation knowledge management (KM) practices. The advancement of internet technology makes it easier for organisation KMS working in a collaborative manner. With the rapid development of KMS in organisation, collaboration among these KMS would make a smooth sharing of information. This research aims to scrutinize the governance mechanism of KMS used in managing and controlling the agency KMS. From the previous study, the governance mechanism had been identified based on the development of the conceptual framework. This study investigates the relationships of governance mechanism that consist of two main sub-systems: 1) KMS governance; and 2) collaborative KMS. A survey was conducted by distributing a questionnaire to 25 respondents from eight (8) Malaysian government agencies. The respondent comprises of Community of Practice (CoP), Subject Matter Expert, ICT experts and KM User. The aim of this paper is to determine the validity and reliability of each dimension in the questionnaire using the Rasch Measurement Model (RMM) analysis. The survey was developed comprises 2 sections consisting of 40 items. A total of 21 responses were received. The RMM is used to measure the quality control of item dimensions in the instrument. As a result, almost all the items in the questionnaire constructs were statistically reliable and valid for further analysis, and a few items need to be revised and changed. This specifies that the respondents are reliable and the items are reasonable for this study.

Keywords: knowledge management system, governance, collaborative.

104: The Influence of Aesthetic Design of E-commerce Website on Intention to Purchase

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Abstract: The evolution of internet has fostered the growth of e-commerce among the organizations and has created a competitive pressure among organizations. The poor website design which unable to attract consumers and increase their probability purchasing from the website. Hence, the aesthetic design features are investigated and prototypes are built based on the aesthetic design features. The Stimulus-Organism-Response (S-O-R) framework for different aesthetic design of e-commerce websites is applied to study the relationship between the elements in the S-O-R model. The influence of aesthetic features of e-commerce website on consumers emotional arousal, attitude and purchase intention are analyze and evaluate through the questionnaire data. This research shows that the high symmetry or high complexity of website has higher impact on the consumer emotional arousal and influence their favorable attitude toward the website and more likely to purchase products or services from the e-commerce website.

Keywords: E-Commerce, Aesthetic Design, Purchase Intention

114: Kansei Engineering Concept in Sound Design

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Abstract: Humans are hearing sound everyday as part of their daily life. There are many products that available in the market nowadays that use sound to provide support and further improve overall product design. Yet, designers often ignored the design features of sound that can get the most from hearing, they only design the products which is functional and good to heard. How to design products that can satisfy human multiple sense of feelings and emotions is one of the mainstream towards product sound design. Hence, Kansei Engineering was introduced to incorporate Kansei into sound design tasks to capture human feelings and emotions during sound development process. This study was focused on sound design by using existing sound specimens as case study to explore on how human feelings and emotions can be evoked by sound physical properties by using Kansei Engineering. In the end, the data obtained were analysed by Factor Analysis to find out what feelings and emotions contribute the most to a sound design. The results were provided as the basis of knowledge collection to support on how the sound design can incorporate Kansei Engineering to embed target Kansei.

Keywords: Kansei Engineering, Emotions, Sound Properties, Sound Design.

116: The Sound Framework of Parameter Mapping in Sonifying 3D Hands Movements

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Abstract: In physiotherapy, most of instructions by trainers or physiotherapists in body movements are normally done through voice instructions or touches. To follow these instructions without seeing it is not easy especially for blind people. It is hoped by listening to non-speech sounds as an alternative of medium of instructions; a person should be able to follow the exact body movements. Thus, this paper explains the potential of using non-speech sound to represent 3D hand movements. In this research, the conversion of data-to-sound technique was using Parameter Mapping, where the movement coordinates were mapped with sound properties. Series of experimental design have been carried out and the results will be discussed.

Keywords: Sonification, Parameter Mapping, Body Movements.

134*: Classification of EEG signal from Capable Dyslexic and Normal Children using KNN

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Abstract: Identifying the relationship and differences of a child's brain signal in learning related activities, could assist in the development of a proper diagnostic assessment system for dyslexia and the information serve as the basis in objectively assessing the dyslexic children performance before and after an intervention programme. This paper describes the classification of EEG signal from capable dyslexic and normal children during writing word and non-word using K-nearest neighbors (KNN). In this work, discrete wavelet transform based feature extraction was employed to extract EEG signal features and the power was calculated from the decomposed EEG signals. The signal was normalized before being classified using various distance function and numerous k value to get the optimum output. Results obtained from this work showed that KNN with correlation and cosine distance functions and with k value of 7 and 9 was able to accurately classify EEG signals from capable dyslexic and normal children. The findings of this study demonstrate that the proposed feature extraction and classification approach produces high classification accuracy.

Keywords: Electroencephalogram, Dyslexia, K-Nearest Neighbor.

119: A Model for Skyline Query Processing in a Partially Complete Database

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Abstract: In the recent years, skyline queries become one of the predominant and most frequently used queries among preference queries in the database system. Its main theme is to identify and return those data items that are not dominated by any other data item in the database. In the past decade, a tremendous number of researches have been conducted emphasized on skyline queries by proposing many variations of skyline techniques for different type of database. Most of these techniques claimed that a database has complete data and values are always present when process skyline queries. However, this is not necessary to be always the case, particularly for large databases with a high number of dimensions as some values may be missing. Thus, existing techniques cannot be easily tailored to derive skylines in a database with missing values. Two significant issues might be raised, the issue of losing transitivity property which thus lead to the issue of cyclic dominance. Finding skylines in a database with partially complete data has not received enough attention. This paper proposes an efficient model to identify skylines over a database with partial complete data. Experimental results on various types of datasets demonstrate that the proposed approach outperforms the previous approach in terms of the number of pairwise comparison.

Keywords: Skyline, Skylines queries, Query processing, Incomplete Data, Preference Queries.

100: Perceptions of Telepresence Robot Form

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Abstract: Research has shown that the form of a telepresence robot can affect the thoughts and behaviour of both the operators and individuals interacting with the robot, however there has been little research into how potential users perceive the various forms of robot in a range of social contexts. This paper reports on a survey study which sought to investigate this topic. The study finds that perceptions of suitability differ across the various forms of telepresence robot and that perceptions of suitability for specific activities were affected by gender.

Keywords: Telepresence; robotics; design; suitability; gender.

149: A novel model for opinion spam detection based on multi-iteration network structure

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Abstract: Online Reviews have an undeniable effect on changing the sale rate of the products or services. It can give a strong temptation for spamming activities. Opinion spam detection and filtering them to achieve more accurate data for further opinion mining processes, are very critical tasks. During last decade, many researches have been accomplished on this area to detect spam reviews and spammers by considering variety range of features and techniques. However, to the best of our knowledge, previous works never considered comprehensive features of entities such as review, reviewer, product and group of reviewers simultaneously. To achieve this goal, we propose a novel Multi-Iteration Network Structure which considers the most effective features along with inter- and intra-relationships between entities of Amazon.com. Experimental results prove that this network-based model can improve the accuracy of spam detection by reducing the false positive/negative noise in classification task.

Keywords: Opinion spam, Network-based model, Iterative algorithm, Feature extraction.

128: Sequential Patterns-Based Rules for Aspect-Based Sentiment Analysis

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Abstract: Expansion, availability and acceptance of World Wide Web (WWW) have dramatically changed the way people think and express their opinions and sentiments. Due to the veracity of the internet, people are inclined to purchase online and used to express their experiences, in the form of reviews, on the buyer's or merchant's websites, social media, web forums and blogs. These experiences of people contain valuable information for the manufacturers to know customer's satisfaction against their products and for other potential buyers to acquire sufficient knowledge before selecting a purchase. Aspect-based sentiment analysis deals with the extraction of such valuable information or knowledge from customer's reviews. One of the key tasks of the aspect-based sentiment analysis is to learn the association or relationship among user's opinions and their targets. In the recent years, dependency tree-based approaches have proved their significance to accomplish this task. The grammatical and language constraints make these approaches vulnerable. In this paper, we have used sequential pattern mining approach to identify association among opinions and their targets. First we mined sequential patterns from customer reviews and secondly we have defined certain rules based on the mined sequential patterns. The experimental results elaborate the effectiveness of sequential patterns in the form of sequential rules.

Keywords: Aspect-Based Sentiment Analysis, Sequential Pattern Mining, Sequential Rules, PrefixSpan.

129: Linguistic-Based SPARQL Translation Model for Semantic Question Answering System

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Abstract: Semantic Question Answering (SQA) aims to translate natural language (NL) questions to Simple Protocol and RDF Query Language (SPARQL) queries to retrieve answer from linked data. SQA deals with the complexity of NL questions because of the users' styles of writing. Furthermore, the process to construct the SPARQL query to retrieve answer from linked data is complex due to the different merging scenarios depending on the six meta-mapping aspects: (1) the question type; (2) the sequence of important POS tags; (3) the preposition occurrence (4) the datatype of the matched RDF triples; (5) the resource heterogeneity; (6) the structure of the matched RDF triples. To date, most existing researchers on SQA system have treated the focus for SQA system to accept complex NL question separately from the focus to address meta-mapping scenarios. The motivation of this study is to design and develop an SQA system that accepts complex NL questions while addressing the meta-mapping scenarios. This is vital because each user has their own idiosyncrasy in composing NL question which needs to be translated to SPARQL query that involve different merging meta-mapping scenarios. We designed the selective POS tag extraction technique and the semantic representation composition technique to handle the complex NL questions. Meanwhile, we formulated a new linguistic-based SPARQL translation model to address the meta-mapping scenarios. The model is formulated using our proposed QALD dataset analysis methodology which can also be used by other researchers to implement on any QALD dataset. Model-Driven Semantic Question Answering (MDSQA) system that is integrated with the two techniques and formulated model is developed to automate the translation of the NL questions to SPARQL queries. MDSQA is evaluated using the QALD-3 test dataset that consists of 100 NL questions as input. The output of the MDSQA are the constructed SPARQL queries. The evaluation results are derived by comparing the constructed SPARQL queries against the actual SPARQL queries provided by the QALD-3 test dataset. MDSQA is able to process all complex NL questions in QALD-3 which consist of simple and complex NL questions without any manual modification of the question. Based on precision and recall of answer type, SPARQL query form, number of triples, placement of triples and SPARQL condition, MDSQA is capable of addressing meta-mapping scenario. Further enhancement is needed to address the drawbacks of this approach.

Keywords: Natural Language Question; Semantic Question Answering; Complex Question; SPARQL; Linked Data

137: Non-English Sentiment Dictionary Construction

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Abstract: Sentiment analysis (SA) in non-English world remains a challenging problem, as constructing language specific sentiment dictionary is an extremely resource intensive process. While different well-defined approaches have been defined for English SA, which resulted English language to be mature and resourceful when it comes to SA, the problem remains far from being solved for other languages such as Malay language, despite having more than 215 million Malay native speakers worldwide. To our knowledge, there is no publically available Malay sentiment dictionary. Most researchers dealing with lexicon based for Malay SA use a translated version of a well-known English lexicon called the SentiWordNet. In this paper, the lexicon gap is addressed by utilizing existing sentiment analysis resources and tools from English along with the automated machine translation capability to automatically build Malay sentiment dictionary which is of high quality and with large coverage of sentiment words. The architecture for constructing Malay sentiment dictionary is presented, comprises of 5 modules: (1) seed words extraction, (2) seed words propagation, (3) weak expression elimination, (4) expressions translation and (5) de-duplication. As a result, MySentiDic1 was constructed comprises of 2,781 Malay sentiment words. To measure the accuracy of MySentiDic, lexicon data is compared with human annotator, the agreement score recorded high at 0.81. MySentiDic data is then compared with Malay translated version of SentiWordNet. The result was promising where MySentiDic recorded 0.22 more accuracy compared to translated version of SentiWordNet which recorded a lower accuracy of 0.58. The discussion and implication of these findings are further elaborated.

Keywords: Sentiment Analysis, Malay Sentiment Dictionary, Malay lexicon, Unsupervised Technique, Natural Language Processing, Data Analytics, SentiWordNet.

126: Sarcastic Tweets Detection Based on Sentiment Hashtags Analysis

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Abstract: Determining Sarcasm among social media is one of the propounded problems from early days. Since recognizing sarcasm is important for development of sentiment analysis systems, identifying sarcastic tweets becomes an issue in this article. Due to the intentional ambiguity in sarcasm, few works have been done in sarcasm detection. In this article, a new Sarcastic Tweets Detection (STD) method is presented for identifying sarcastic tweets more accurate at the level of hashtag. In the proposed STD, Sarcasm Hashtags Classifier (SHC) is developed for classifying tweets into sarcasm and non-sarcasm based on the sentiment analysis of the hashtags. The SHC, works based on the Sarcasm Hashtags Indicator (SHI) and contrast between the orientation of the tweets and hashtag(s). The proposed classifier (SHC) helps us to interpret sarcastic better than the existing work by covering several types of tweets.

Keywords: Sarcastic Detection, Hashtags Sentiment Analysis, Sentiment Analysis.

048: Beacon-integrated Attendance App

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Abstract: Taking attendance in class is still practised in many institutions of higher learning. With the advent of technologies, the conventional practice with pen-and-paper is deemed inefficient and time consuming. On top of the possible human-error in taking the attendance and also the ease of tampering with the data, manually taking attendance is very time-consuming. There are many apps developed to tackle these issues. However, many of these apps merely transform the practice from physical pen-and-paper to electronic touch-and-click in which the attendance is still taken by the instructor. In this paper, we propose the use of a beacon device to verify the attendance and it can be configured for automatic attendance taking. On top of that, other functionalities such as attendance report, submission of letter of absent, assign demonstrator/tutor to take attendance, manual attendance for those without smartphones are also included

Keywords: Beacon-based app, Android app, Mobile app.

106: Comparative Analysis of Routing protocols over WiMAX

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Abstract: Mobile WiMAX is a fast growing broadband access technology that enables low-cost mobile Internet applications, and realizes the convergence of mobile and fixed broadband access in single air interface and network architecture. Mobile WiMAX combines Orthogonal Frequency-Division Multiple Access (OFDMA) and advanced multiple-input and multiple- output (MIMO) schemes along with flexible bandwidth and fast link adaptation, creating a highly efficient air interface that exceeds the capacity of existing and evolving 3G radio access networks. WiMAX networks, built on all-IP network architecture for plug and play network deployments, can support a mix of different usage and service models. However, the End-to-End delay occurs in delivering message for dynamic WiMAX environment. In this paper, End-To-End delay performance of the Mobile WIMAX has been studied in different situations using QualNet on two routing protocol namely Dynamic Manet on Demand (DYMO) routing Protocol and Optimized Link State (OLSR) Routing Protocol. The result shows that DYMO protocols outperform 79.5% in End to End delay better than OLSR.

Keywords: WiMAX; DYMO; OLSR; QualNet

135: Image Reconstruction Technique for the Ultrasonic Tomography System VIA Metal Pipe

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Abstract: In this research, the non-invasive ultrasonic transmission tomography is investigated. In order to model the ultrasonic wave scattering for different thickness of metal pipes, two-dimensional (2D) finite element modeling (FEM) has been utilized. The wall thickness variation of the metal pipe and its influence on propagation of the ultrasonic pressure wave are explored in this paper include frequency analysing in order to find the maximum applicable frequency. The experimental results confirm the simulation results, in that for each wall thickness of the metal pipe, there is a separate maximum applicable ultrasonic frequency in UTT process. When the applied frequency is above the determined maximum applicable ultrasonic frequency, the Lamb wave disturb the straight-path signal and objects inside the metal pipe would not be detectable with UTT process.

Keywords: Ultrasonic transmission tomography, ultrasonic sensors, ultrasonic wave, non-invasive tomography, metal pipe.

138: Temporal-based Approach To Solve Item Decay Problem In Recommendation System

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Abstract: The rating matrix of a recommendation system contains a high percentage of data sparsity which lowers the prediction accuracy of the collaborative filtering technique (CF). Recently, the temporal based factorization approaches have been used to solve the sparsity problem, but these approaches have a weakness in terms of learning the popularity decay of items during the long-term which lowers the prediction accuracy of the CF technique. The LongTemporalMF approach has been proposed to solve these problems. The x-means algorithm and the bacterial foraging optimization algorithm have been integrated within the LongTemporalMF approach to generate and optimize the genres weights which are integrated with the factorization features and the long-term preferences in terms of personality. The experimental results show that the LongTemporalMF approach has the accurate prediction performance compared to the benchmark approaches.

Keywords: recommendation system; collaborative filtering; data sparsity; matrix factorization; clustering; bacterial foraging

120: Implementation of Risk Mitigation among IT Governance Practitioners in Malaysia

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Abstract: IT industry is facing risks that make IT projects not able reach the scheduled and quality. Therefore, there is an important for risk mitigation in IT Governance to support IT team. Risk mitigation provides expert assistance during IT project activities in supporting team members and decision makers to identify risks associated with in IT process by providing risk documentation of probability and impact of IT risks. Risk mitigation introduces risk advice and designing appropriate strategic alternatives to treat the risk by providing support for the reuse of knowledge. There are, numerous studies have been suggested for seeing the issues in risk mitigation. This paper is a contribution to study on implementation of risk mitigation people management, process management, technology management and quality management involved in IT Governance. The findings of this review indicate that there are some limitations experienced by IT practitioners in mitigating risk effectively.

Keywords: IT Risk Mitigation; Risk Management; IT Project Management.

124: Experience Design Framework for Reconstructed Virtual Architectural Heritage

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Abstract: The reconstruction of virtual heritage is a strong area of research in virtual reality (VR) and has steadily established clear guidelines for developers to follow. While this area is growing, the elements to make the virtual reconstructed environment to be more dynamic and lively are still a big challenge for VR designer. Even with the rapid changes of technology and devices to maximize user experience nowadays, there are still missing elements on the content creations in the reconstructed virtual heritage (VH) application that makes it lifeless and dreary. By considering the end user expectation and the comparison with elements in the existing virtual heritage application (VHA), this paper presents a conceptual framework to maximize experience in VAH application. The framework suggests and considers three components of experience in VAH, which are contextual experience, interactive experience and dynamic experience.

Keywords: virtual architectural heritage (VAH), contextual experience, interactive experience, dynamic experience.

134: Decision Tree for Pre-Graft Orthodontic Treatment: A Case Study of Cleft Lip and Palate Patients in the West Coast of Sabah

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Abstract: It has been a common practice in most treatment protocols for cleft lip and palate patients to include orthodontic treatments pre or post-alveolar bone graft surgery. In fact, there are evidences showing the prevalence of these procedures towards the success of the surgery. This study focused on the pre-graft orthodontic treatments, looking at significant attributes of the cleft lip and palate patient's conditions that contribute to the success of the pre-orthodontic treatment. The success of such treatment was defined by the duration taken by patients in preparation for the bone graft surgery. Any time longer than 12 months was considered as a failure. 23 dataset of patients from the west coast of Sabah were gathered, and the C4.5 decision tree classifier was used for the classification model. The mean age of the patients started the pre-treatment was at ≈ 11 years old (10.57). Seven attributes were tested, and the produced tree (model) contained only three nodes. The type of affected cleft area was the root node, followed by the internal nodes of the cleft lateral and the gender of the patients. The model gave 78% accuracy with a kappa value of ≈ 0.5 (0.5148) after 10 fold cross validation. The produced tree suggested that bilateral cleft lip and palate patients were most likely to have success in the pre-graft orthodontic treatment.

Keywords: Decision Tree, Classification, Pre-Graft Orthodontic Treatment, Pre-Alveolar Bone Graft, Cleft Lip and Palate.

135*: Optimised Electronic Circuit Model of Sensitive Type of Mycobacterium Tuberculosis

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Abstract: A model that mimics the Mycobacterium Tuberculosis is required before a non-invasive Mycobacterium Tuberculosis detection system is developed to assist the evaluation of the performance of the system. Currently, there is no electronic model available. This paper describes the development of an electronic circuit model of the sensitive type of Mycobacterium Tuberculosis. The model was developed based on the collection rate of the real Mycobacterium Tuberculosis which was then converted to gain. Regression model analysis was performed on the gain versus frequency graph to obtain the best fit equation. Based on the regression model analysis results, three electronic circuits; RLC, RC and LC circuits were designed and simulated. Optimization was carried out to produce results that resembles the rate of collection graph of the sensitive type of Mycobacterium Tuberculosis. The simulation results showed that the LC circuit is the optimum model since it produced the lowest percentage difference in gain than other circuit models. The finding is very useful, the model can be used to anticipate the behavior of the sensitive type of Mycobacterium Tuberculosis and to examine the feasibility of the Tuberculosis disease non-invasive detection system.

Keywords: Gain, Mycobacterium Tuberculosis, Passive Filter, Regression Model, Tuberculosis.

113: Multi Label Classification on Multi Resident in Smart Home using Classifier Chains

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Abstract: Rapid development in smart home environment are driven by the development of computing and sensing technology, has been changing the landscape of home resident's daily life. Among others, activity recognition has become an interesting area of exploration in the domain of smart home. Activity recognition describes the paradigm of obtaining raw sensor data as inputs and predicting a home resident's activity accordingly consist from environmental-based sensors that are embedded into the environment. The recognized patterns are based on Activity of Daily Living (ADL). In this paper, we design a multi label classification framework to cater multi resident in smart home environment using Classifier Chains approach. Human activities, everyday are gradually becoming complex especially relating with multi resident requirement and thus complicate the inferences of activities in smart home. Hence, this paper will highlight the methodology of sensing technology involved as well as important research works done in activity recognition area specifically on multi resident complex activity recognition involving interaction activity of multi resident within the same environment. Furthermore, this paper also discussed potential directions for future research in the activity recognition.

Keywords: Complex activity recognition, smart home sensor, multi label classification, multi resident, Classifier Chains.

140: Robust Transceiver in MIMO Relay Systems with Direct Link

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Abstract: Cooperative MIMO (Multiple-Input-multiple-Output) relay techniques can improve wireless communication systems. A two-hop AF (Amplify-and-Forward) MIMO (Multiple-Input-multiple-Output) relay system with a direct link and imperfect channel state information for multiuser system is investigated. The goal is to search the global optimal solution to a MMSE (Minimum Mean Square Error) transceiver design problem for symbol detection at the destination. Optimization over the source and relay precoders can be approached by SDP (Semidefinite Programming). Iterative source and relay precoding matrices lead to a global optimum solution. Simulation results show that proposed robust design outperforms the corresponding non-robust design.

Keywords: AF MIMO Relaying, Direct Link, Robust Transceiver, Global Optimality

142: Utilization of Electronic Business Plan for Small and Medium Enterprises (SMEs)

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Abstract: A business plan is a formal statement of business goals, the reasons they are attainable, and plans for reaching them. Currently, the manual template of a business plan is the main reference in Small and Medium-Sized Enterprises (SMEs) but there is no standard template that exists as all templates that available in the Internet is different from each others. This leads to confusion as to which is the best template to be used. Significantly, there is unavailability of electronic platform of the business plan. Thus, Electronic Business Plan (EBP) for SMEs is proposed and developed using the Expectation-Confirmation Theory approach. This EBP is a windows-based program that is developed to serve as an electronic platform for SMEs in order for them to generate a business plan for starting a new business or for applying any financial support. Results indicate that EBP is a useful tool for business plans and that the majority of the users give positive feedback on this developed EBP. Hopefully, by utilizing this program into business plan, it can play an important role for any individual especially young entrepreneur in SMEs to generate and write their business plan properly and easily.

Keywords: Electronic Business Plan, SME, Expectation-Confirmation Theory, Web-based program

133: Mechanism for Sarcasm Detection and Classification in Malay Social Media

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Abstract: The classification of users' sentiment from social media data can be used to learn public opinion on certain issues. The presence of sarcasm in sentences can hamper the performance of the classification as it tends to "fool" the system. In this paper, we investigate mechanisms for detecting sarcasm in Malay social media data that contain sarcastic contents; more specifically the public comments on economic related posts on Facebook. Two features were investigated; the n-gram and punctuation marks. Features selection in the form of Pearson's correlation was then applied to reduce the features size. To measure the performances of the selected features, two supervised classification techniques were employed which are k-Nearest Neighbors and non-linear Support Vector Machine. Experiments on sarcasm detection and classification were conducted. Results show that combination of n-gram and punctuation marks produced the best F-measure and Area Under Curve of 0.818 for sarcasm detection. Extended experiment on sarcasm classification recorded F-measure of 0.991 with Area Under Curve of 0.994 for sarcasm positivity while F-measure of 0.902 with Area Under Curve of 0.846 for sarcasm negativity.

Keywords: Sentiment Analysis, Sarcasm, Classification, Malay Social Media.

130: Artificial Neural Networks for Satellite Image Classification of Shoreline Extraction for Land and Water Classes of the North West Coast of Peninsular Malaysia

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Abstract: Monitoring and measuring the shoreline of coastal zones helps establish the boundary of a country. Such an activity entails ground survey, topographic survey, aerial photo, or remote sensing techniques to extract the shoreline. For example, the remote sensing technique to determine shorelines involves the extraction of relevant data from satellite images. Specifically, the satellite image classification enables shorelines to be extracted from land and water classes with a high degree of precision. However, extracting information from satellite images is challenging as it relies on a strong understanding of image processing, machine learning, and data mining techniques. Thus, the researchers discuss the study of the pixel-based classification of machine learning techniques to classify land and water classes in terms of accuracy, training time, and testing time. The research findings showed that the Multilayer Perceptron Artificial Neural Network (MLP ANN) was the most effective technique, compared with other techniques, hence reinforcing its importance in classifying land and water classes.

Keywords: Multilayer Perceptron, Artificial Neural Networks, Image Classification, Shoreline Extraction, Machine Learning

133*: Support Vector Machine Classification of EEG signals for Word and Non-Word Writing in Normal, Poor Dyslexic and Capable Dyslexic Children

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Abstract: Electroencephalogram (EEG) signal provides an insight into the workings of the brain by recording of electrical activity on the surface of the scalp. The differences in the EEG signal neural representations from the norm indicates abnormality and thus classifiable. It is known that dyslexia, a neurological disorder that impairs the subject ability to properly read or write, is caused by the inefficiency of the brain's left hemisphere processing region. This study looks into the classification of EEG signals of writing word, non-word and a combination of both in identifying subjects as either normal, poor dyslexic or as capable dyslexic. With an overall total of 21 subjects having an age range of 6 to 11 years old, band power features were extracted from EEG signals recorded from eight (8) electrode locations which are, C3, C4, P3, P4, T7, T8, FC5 and FC6 that corresponds to the brain's learning pathway using Daubechies wavelet transform of order 2. A multiclass support vector machine (SVM) was applied as the classification algorithm with the classifier having three (3) different training data set of word, non-word and combination of both. Results showed an improved classifier performance with the combine training sets of word and non-word with an accuracy of 100% for word test data and 83.3% for non-word. Applying only word for the training data yielded an accuracy of 75%, and for the non-word, it is 58%.

Keywords: Support Vector Machine, Daubechies, Electroencephalogram, Dyslexia.

118: Electronic Opinion Analysis in Organizational Culture Audit

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Abstract: Organizational culture defines an organization's uniqueness and identity. It is made up of values, beliefs, attitudes, norms, and patterns of behavior that are shared and adopted by individuals in the organization to cope with internal and external pressure. Computerized culture audit system is more cost efficient, time saving and is less prone to error. However, one of the challenges faced is the difficulty in obtaining accurate employee opinions from free texts. The existing sentiment analysis methods available cannot effectively be applied directly to the organizational culture context for employee opinion analysis. Therefore, this study proposes an employee opinion analysis method known as "Opinion Keyword Extraction" which is based on building customized corpus specific for sentiment analysis in organizational culture context. Opinion Keyword Extraction is a combination of the rule-base and lexicon approach using our own corpus datastore. The customized corpus consists of features related to negation detection, detection of special words relevant to organizational culture and detection of emotion symbols. We evaluated our method using primary data collected from 100 participants and found that our Opinion Keyword Extraction method performed better in comparison with existing methods

Keywords: Organizational culture audit, Sentiment analysis, Text mining