



THE INTERNATIONAL CONFERENCE ON COMPUTER ASSISTED SYSTEM IN HEALTH

**19 - 21 December 2014
Putrajaya, Malaysia**

CASH 2014

**CONFERENCE
BOOKLET**

Universal Academy of Science and Technology

Universal Academy of Science and Technology (UNITECH) was established by a number of scholars, researchers and academicians in various fields especially in the field of Science and Technology; their primary aim is to disseminate knowledge among human beings all over the world.



Design for Scientific Renaissance

Design for Scientific Renaissance is established by a number of scholars in various fields; their primary aim is to disseminate knowledge among human beings all over the world.

DSR's Vision

To promote a scientifically fair globalized world.

DSR's Missions

To provide the base for promoting advanced research.
To publish articles and papers in various fields, that adds high value empirically and theoretically.



International Conference on Computer Assisted System in Health (CASH)

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Patrons



Background

The International Conference on Computer Assisted System in Health (CASH) provides a platform related to special research interest where computer technology is applied pre-, intra- and/or post-operatively to improve the outcome of any surgical procedures, assist diagnostic procedure and enhance related clinical database management system. The main purpose of this conference is to provide an international discussion for academics, scientific researchers, clinical scientists, surgeons, engineers, and industrial partners for exchanging new ideas as well as the latest developments in this area of research. Secondary purpose is to promote research collaboration between participants from different countries and disciplines. CASH 2014 holds from December 19-21, 2014 at Palm Garden Hotel, IOI Resort, in the city of Putrajaya, Malaysia. The conference program consists of high-profile plenary/keynote lectures, workshops, invited sessions, oral and poster sessions, and exhibitions.

Publications of CASH Conference

Selected papers will be published in the following Journals.

- Journal of Advanced Medical Research
- Journal of Advanced Science and Engineering Research
- Journal of Advanced Computer Science and Technology Research
- Journal of Advanced Biomedical and Pathbiology Research

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General Chair Forward



University Putra Malaysia (UPM) is delighted hosting the 1st International Conference on Computer Assisted System in Health (CASH 2014). CASH 2014 is the International conference co-organized by University Putra Malaysia and Design for Scientific and Renaissance (DSR).

It is my pleasure to extend warmest welcome to all participants, researchers and keynote speakers. We are very proud to be involved in founding the community for the Computer Assisted System in Health which is expected to expand and create a variety of ideas to help the people who need the community output which include health products, computer systems as well as related articles. This Conference is our initial attempt to bring together and strengthen cooperation between medical experts, computer specialists and business experts in medical system. The purpose of this togetherness is to strengthen cooperation and mutual understand the needs and strengths of each expertise to ensure that close cooperation can realize more sophisticated computer systems to facilitate the tasks of clinicians and shorten the medical procedure time for each patient.

Thank you very much for attending the CASH 2014 conference and tutorials. I would like to express my appreciation to DSR, committees and participants who make this conference successful. I wish everyone; especially the participants and committee successfully trigger brilliant ideas, thoughts, sharing experience and have wonderful time. Welcome to our new community, Computer Assisted System in Health.

Keynote Speaker 1

**DR. AHMED RAZMAN
ABDUL LATIFF**

UNIVERSITY PUTRA
MALAYSIA

KUALA LUMPUR, MALAYSIA



Dr. Ahmed Razman Abdul Latiff is a Director of Non-Thesis Program (MBA & MM) and also in charge of Entrepreneurship in the Putra Business School. He holds a Bachelor Degree of Accounting and Finance (Honours) from Lancaster University, United Kingdom, a Master Degree of Accounting from Nanyang Technological University, Singapore and a Master Research Degree in Accounting and Financial Management from Lancaster University, United Kingdom. He also holds a PhD in Corporate Governance from Liverpool John Moores University, United Kingdom. Dr. Ahmed Razman has presented and published numerous papers at various conferences and journals. He is one of the editorial board of Asian Journal of Case Research and he is also the Vice President of Case Writers' Association of Malaysia.

BUSINESS KNOWLEDGE EQUALS ENTREPRENEURIAL SUCCESS

DR. AHMED RAZMAN ABDUL LATIFF

The Malaysian government is always encouraging the public universities to be actively looking for ways to become sustainable, in terms of managing their finances. One such way is to commercialize their intellectual properties. For research universities they have begun providing various incentives to their researchers and inventors (including professors and their students) to bring their inventions to the market. Some of these incentives come as percentages of takings from licensing fees, as well as royalties charged for the use of intellectual property. Another option is encouraging innovators to establish their own start-ups, and commercialize their products themselves. To prepare them to become entrepreneurs, training is provided in form of Business Model Canvas, business plans, pitching, and securing funding. But in addition to acquiring theoretical knowledge, the innovators also need to actually do certain things in order to succeed. And this is when many “wannabe entrepreneurs” stumble. They have talked about their great inventions, and the fortunes these inventions will yield, without realizing that they have no idea how to market their products—or even who their likely buyers are. Part of the problem is simple enough to understand: Most entrepreneurs start by identifying customers’ needs, and then trying to meet those needs with existing products or services, through the creation of value added. But for university researchers-turn-entrepreneurs, the products and services are in place, solutions, but they must identify suitable customers, and figure out how to convince them to buy. This is where knowledge of marketing becomes critically important (Indeed, it’s no surprise that many CEOs possess sales or marketing backgrounds.). In addition of marketing, one also needs to understand business itself, and this means understanding more than simply pricing, technology and budgets. It also includes channels of distribution, advertising, and public relations.

Keynote Speaker 2

PROF. DR. MOHD ZAMRIN
DIMON

CONSULTANT
CARDIOTHORACIC SURGEON
UITM HOSPITAL
MALAYSIA



Prof. Dr. Mohd Zamrin Dimon is a Consultant Cardiothoracic Surgeon at the UITM Hospital. He is also a Senior Fellow and Senior Consultant Cardiothoracic Surgeon at Department of Surgery, UITM. Dr. Zamrin was previously the Head of Surgical Department, Faculty of Medicine, Universiti Malaysia Sarawak (UNIMAS) from 2004 - 2006. He was also previously appointed as Honorary Cardiothoracic Surgeon at Sarawak Heart Centre, Kuching, Sarawak and visiting consultant Cardiothoracic Surgeon at Normah Medical Dr. Zamrin has performed more than 1,500 cardiac surgeries including coronary artery bypass grafts (CABG), aortic and mitral valve procedures, thoracic surgeries including lung resection for malignancies, video-assisted thoracoscopic surgery, endoscopic radial artery harvesting and endoscopic saphenous vein harvesting.

PROFESSIONALS IN THE MEDICAL FIELDS

PROF. DR. MOHD ZAMRIN DIMON

In Malaysia, the professionals in the medical fields are faced with an increasing quantity of highly complex, multi-dimensional and ill-structured data. The Cardiothoracic area has the most complex data management and remains much unexplored. There are vast amounts of clinical data; some are digitally stored in heterogeneous platform form while others are still recorded on paper. These collections of data are naturally, highly complex, multi-dimensional, and unstructured. Thus, medical practitioners cannot effectively integrate, apply and manipulate all this data into knowledge for further clinical research advancement. The CASD team investigate and sought to identify the factors preventing the integration into unified clinical information and on how to tap on cardiothoracic healthcare knowledge for clinical discoveries beyond human expert diagnosis and decision making with supporting visualization. Investigation and observation was carried out on cardiothoracic unit in three different hospitals in Malaysia. From the observation, the team has successfully designed and develop a smart database that integrates the database with information visualization as an extra function.

Keynote Speaker 3

DR. LARRY CROFT

MALAYSIAN GENOMICS
RESOURCE CENTRE BERHAD
(MGRC)



Dr Larry Croft is the Chief Scientific Officer at Malaysian Genomics Resource Centre Berhad (MGRC). He has over 20 years of experience in bioinformatics, with a long experience in high-performance computing using SGI, Sun and Cray supercomputers. He has worked in both industry (pharmaceutical) and academia in the United States, Australia, Denmark, Switzerland and Malaysia. He has research interests in cancer transcriptomics, non-coding RNAs and the computational architecture within mammalian cells.

TARGETED THERAPIES AGAINST CANCER - DNA SEQUENCING AND THE GROWING NEED FOR CLINICAL BIOINFORMATICS.

DR. LARRY CROFT

With a rapid expansion in drugs targeting numerous cancer mutations and the diversity of these mutations between cancers, it is becoming important to store and analyze the DNA of patients and their cancers. This DNA data makes possible tailored drug therapies targeted to mutations specific to a patient's cancer. While early case studies demonstrate astonishing results, more data needs to be collected and clinical computer infrastructure needs to be developed to make such therapies possible.

Plenary Speaker 1

DR. MOHD ZALIMAN MOHD YUSOFF

Universiti Tenaga Nasional - UNITEN

Practical alternative treatment modules and an immersive 3D therapy system

Many studies have reported that excessive work stress causes negative impact to individuals' mental and physical health. A numbers of researchers have identified that mental immersion therapy help individuals regulate their emotional state, which subsequently remedy their mental and physical health problem. This concept is widely applied in one of the technique known as imaginary therapy. It works by virtually transporting someone to a desired or preferable environment Based on the concept as stated above, we propose to develop an alternative stress treatment by using relaxing, interactive, and immersive 3D environment through virtual reality technology. The proposed technique would complement the imaginary process which is often practiced in a current method of stress treatment. In addition to that, the proposed technique also enables users to be treated in a "real" conscious mode. To improve its effectiveness, multisensory devices such as HMD, tracker, 3D audio system, and joystick are used and these integration allow users to perform their tasks more naturally as in a real world. The outcomes of this project can be summarized into two folds; practical alternative treatment modules and an immersive 3D therapy system. In general, the objective of this research is aimed to help Malaysian workers to remedy their job stress at workplace by using self-controlled and self-monitoring modules in a VR environment.

Plenary Speaker 2

DR. RABIAH ABD KADIR

UNIVERSITY KEBANGSAAN MALAYSIA

Impact of Artificial Intelligence in Health Care

Improving the Interpretation of Clinical Data in CICU Artificial Intelligence (AI) certainly make a big impact to our lives such in movies, therapist, health care, factory etc. However, AI is still in the very early stages of development in health care in so many ways. It can't match human intelligence and definitely it can't replace doctors at the bedside. AI involves complex algorithms that analyse the data. It can be a tools to transform the data from just a raw medical data into a meaning full data that able to aid the doctor with clinically relevant and high quality data in real time. In this presentation, I would like to share about the implementation of an intelligent system that has been designed to improve interpretation of clinical data which will then increase the quality and efficiency of the working environment in CICU. The system has been developed which provides an option to the users to deal with hemodynamic data by just inserting data, and the system will process all the functions including the suggestion on the medicine to be given. This intelligent system has the potential to improve the efficiency, accuracy and timeliness of clinical decision-making in CICU. Many research have been done in this field, where research from Indiana University found that using AI in patient care can improve nearly 50% patient outcomes for the physicians to make decisions. Also, for health care costs decreased from \$497 to \$187 which more than 50% percent.

Plenary Speaker 3

DR. ROHAYA LATIP

UNIVERSITY PUTRA MALAYSIA

Leveraging Big Data for Healthcare Industry

The amount of data being collected and stored is vast and growing rapidly. Within the healthcare industries data are being generated through medical devices. The Big Data revolution has taken most industries by storm, and the science of data management and analytics, triggered the need for organizations to convert the resources into information and knowledge that helps them to achieve their objectives. Executives from healthcare agencies believe Big Data will transform health management and patient care. However, many challenges need to be overcome especially in the Malaysia healthcare scenario. talk shall highlight the Big Data challenges in the Malaysian Healthcare Industry and potential solutions for leveraging Big Data for the Healthcare industry.

Accepted Papers

Using Visual Knowledge in A Waiting Area to Alleviate Client's Anxiety

Wan Nor Hafidzah Binti Wan Mohd and Fakhrul Hazman
Bin Yusoff

UiTM , Malaysia

Abstract :Anxiety may happen to every human especially in a uncertain waiting environment. Lengthy waiting time can disturb and damage the image of a company's performance. Understanding on waiting time anxiety and visual knowledge concept from all researcher backgrounds has been one of the key points in implementing an efficient visual knowledge tool. This paper will look into related researches that incorporate waiting time anxiety and visual knowledge in their works. Finally some discussions and opinions are presented for the future research.

Technical Considerations on the Use of Web 2.0 Application as Telemedicine Software Tool

Noorfaizalfarid Mohd Noor¹, Aznor Fadly Azim², Tajul
Rosli Razak¹, Iman Hazwam Abd. Halim¹ and Muhamad
Arif Hashim¹

¹Universiti Teknologi MARA (UiTM) Perlis, Malaysia

²Hospital Sultanah Bahiyah, Malaysia

Abstract : Web 2.0 application brings people together in a more dynamic and interactive space. It allows users to interact and collaborate with each other in virtual community. Instead of merely reading in the web, the users are able to contribute and share their ideas, responds and materials in a real time communication. These requirements enable Web 2.0 to be used in telemedicine to support medical consultations, patient monitoring and counseling, radiology, medicine education and healthcare services. To attest on this subject, we have proposed four Web 2.0 applications for the medical practitioners to be used as their telemedicine tool. This paper develops a research on how Web 2.0 application can become the alternative software tool solution in telemedicine. Hence, it can reduce the cost of acquiring telemedicine software in hospital.

Detection of leukemia cells using Otsu and Cellular Automata

Waidah Ismail

University Science Islamic Malaysia, Malaysia.

Abstract : In this paper highlighted the study on automated detection of leukemia cells using two method Otsu and cellular automata. In the Cellular Automata based on the rules with eight neighborhoods whichever one of the neighborhood “alive” all the eight neighborhood “alive”. Then we perform Manhattan distance method to find the distance between the leukemia cells and the background. We are using the real data from Hospital Universiti Sains Malaysia. We collected 322 images of leukemia cells of AML. The result show we managed to get 98% in using otsu and cellular automata.

Sobel And Canny Edges Segmentations For The Dental Age Assessment

Muhamad Rizal Mohamed Razali¹, Nazatul Sabariah Ahmad², Rozita Hassan³, Zulkifly Mohd Zaki² and Waidah Ismail²

¹Penang Skills Development Centre, Malaysia.

²Universiti Sains Islam Malaysia, Malaysia.

³Universiti Sains Malaysia, Malaysia

Abstract : The x-ray image is a greyscale image and the distribution of the intensity of the pixel is uneven. The x-ray image widely use in dental age assessment especially Demirjian method. The purpose of the dental age assessment is to estimate the age of unidentified bodies. The current process is done manually by the examiner. The process potentially converted to an automated system. The development an automated dental age assessment required segmentation process; which is dividing the image into multiple meaningful parts based on region and edge. The edge segmentation form a contour based on the links detected. We present two types of edge segmentation methods (i.e Sobel and Canny). The objective of the study is to make a comparison between the two methods. Result showed Sobel method was able to segment all the teeth area and remove the noise on the x-ray image while Canny algorithm was not able to segment all the teeth area especially incisors.

Medical Data Simulation with Self-Adaptive Multi-Instance Broker in Hierarchical Cluster Grid Structure

Bakri Yahaya, Rohaya Latip, Azizol Abdullah and
Mohamed Othman

Universiti Putra Malaysia, Malaysia

Abstract : This research explores the use of grid resource broker as a high-level solution for the grid resource management system in a hierarchical cluster grid environment to process medical imaging data. There are two components to the Multi-Instance Broker which are the Self-Adaptive Multi-Instance Broker Manager and the Broker Instance entity. The Manager is adaptive through its self-determination of the number of instances with the assistance of the Grid Information Service. The Broker Instance entity generates the broker instances determined by the Manager and implements scheduler properties. The Multi-Instance Broker generates multiple replicated broker instances as service extenders which handles concurrent parallel jobs simultaneously. Both the framework and strategy for implementation has been determined in this study and at the same time, the properties and characteristics of the multi-broker instance are identified and presented here.

Automatic Generation of ANFIS Rules in Modelling Breast Cancer Survival

Hazlina Hamdan¹ and Jonathan M. Garibaldi²

¹University Putra Malaysia, Malaysia

²University of Nottingham, United Kingdom

Abstract : Data collected to be processed by means of rules can be done in multiple ways. In our previous papers, the Adaptive Neuro-Fuzzy Inference System (ANFIS) has been applied to breast cancer data for modelling survival in the presence of censorship. In initial work, the membership functions for the input data were defined by experts, along with an estimation of output. However, if knowledge about the data is vague or the expert cannot express the knowledge explicitly, the initial membership functions can be defined by partitioning the input space equally. Extracting fuzzy rules from the data using clustering methods is another technique used to initialise the position of membership functions of the input data. In this paper, we investigate whether such automatic methods can be used to initialise the antecedents of our model. Two clustering methods were applied to partition the input space, namely fuzzy c-means clustering and subtractive clustering, to establish the initial membership functions and a set of rules for the models. Further, to improve the model performance and high model accuracy, model optimisation was performed using the ANFIS approach.

Towards Developing A New I-P Technology Adoption Framework : A Research Road Map

Ismail Bile Hassan, Masrah Azrifah Azmi Murad, Rozi
Nor Haizan Nor and Salfarina Abdullah

Universiti Putra Malaysia, Malaysia

Abstract : While several studies have been conducted relating to the acceptability and use of Smart National Identity Card (SNIC), research in determining factors that influence the citizens' acceptance and use of health information application in (SNIC) has not yet been conducted. This paper presents a new paradigm of individual level technology acceptance and use framework known as I-P (Individual- Privacy) to study the acceptance and use of health information application in SNIC. Furthermore, the prior literatures discovered that there are factors such as trust, perceived risk, Privacy concern and perceived credibility need to be incorporated into technology adoption models. Therefore, this research contributes to the body of knowledge towards acceptance and use of SNIC applications from e-government perspective by providing a clear understanding on interrelationships of both technology adoption and privacy calculus factors in predicting health information application in SNIC acceptance and use . This study applies extended Unified Theory of Acceptance and Use of Technology (UTAUT2) along with the privacy calculus model as the foundation information system theories. Nevertheless it is argued that UTAUT2 is a broad framework of technology adoption.

Image Stitching of Textures for Augmented Reality Medical Training

Masyura Ahmad Faudzi¹, Rahmita Wirza OK Rahmat¹,
Puteri Suhaiza Sulaiman¹ and Mohd Zamrin Dimon²

¹ Universiti Putra Malaysia, Malaysia

²UiTM, Malaysia

Abstract : Augmented reality is an area that requires the participants to be fully immersed in the environment. As such, the appearance of the object must be as close as possible with the real object, which is really challenging. In achieving a realistic model, a camera capture images are mapped onto the model. The main phase in fulfilling these criteria are seamless image registration and ensuring the mapping the of the images onto the model. The virtual model, in this case, the virtual heart is going to be created by capturing multiple images of the real heart from different angles. The images are then going to be registered before they can be mapped onto the 3D model of a heart. Several image registration and texture mapping method were reviewed in this paper. A preliminary experiment on the texture mapping is implemented using two well-known methods; Scale Invariant Feature Transform and Speeded-up Robust Feature.

Maximizing Information of Multimodality Brain Image Fusion Using Curvelet Transform with Genetic Algorithm

Muhammad Arif¹, Nor Aniza Abdullah¹, Shiva Kumara Phalianakote¹, Norlisah Ramli¹ and Manzoor Elahi²

¹University of Malaya, Malaysia

²COMSATS Institute of Information Technology, Pakistan

Abstract : The existing medical image fusion techniques lack of the ability to produce fused image that can maintain fine details of information content from the source images. In this paper, we introduce curvelet transform and Genetic Algorithm (GA). The curvelet transform performs better than wavelet transform in preserving visual image content particularly the edges. The use of GA can further refine the features of the fused image, and solve the existing uncertainty and ambiguity in the smooth region of the input image. Our method is beneficial to image fusion techniques whose applications rely on the source information of local images. Our experimental results indicate that our method performs better than the baseline methods in terms of quantitative image fusion performance.

Information & Communication Technology (ICT) to Manage Population, Health & Human Well-Being

Emmanuel Ukpe, Adeola Barakat Adeyemi, Ibisu
Nwachukwu, Chinwe Ibecheozor, Mohammed Abubakar

American University of Nigeria, Nigeria

Abstract: This paper discusses extensively on how Information Communication and Technology (ICT) can be used to manage the population, health and human well-being in rural areas. It addresses the positive (advantages) effects and negative (disadvantages) effects of ICT to general human well being, with more focus on the adverse effects of ICT on the health and human well-being of the rural population. The article delves into the use of ICT to control the population in the rural areas. It points out even though our world is being thrust into technological development we should not be entirely reliant on ICT. This paper also lays out the possible solutions to the adverse effects caused by ICT, with the aim that if these solutions are properly implemented, the disadvantages of using ICT will be significantly reduced.

Stress Assessment While Listening To Quran Verses

Amjad M.R. Alzeeralhouseini¹, Imad Fakhri Al-Shaikhli¹,
Ibraheem Ahmaro², Abdul Wahab Abdul Rahman¹,
Mariam Adawiah Dzulkifli¹ and Khamis Alarabi¹

¹International Islamic University Malaysia, Malaysia

²Universiti Tenaga Nasional, Malaysia

Abstract : Stress and anxiety are one of the most widespread problems presently, stress treatment has been featured in many researches. The use of Quran offers a substantial help in treating stress. The purpose of this study is to examine the various aspects and perspectives of human emotions while listening to Quran Recitation. This study aims to identify and select verses that have more psychological impact than other verses and to identify the most Quran reciter that respondents believe his voice brings calmness and tranquility to their mind. Quantitative and qualitative methods were adopted. An online distributed questionnaire was sent to the academic staffs of all the Islamic faculties in the Malaysian public universities, five subjects participated in EEG experiment to identify their emotions while listening to these Quran verses. Five Quran verses and one reciter were identified, while experiment indicates that the subjects are more relieved and relaxed when listening to these Quran verses.

Investigating the empirical relation and Importance of Perceived Usefulness, Perceived Ease of Use and Intention to Use Online Information Resources for Evidence Based Medicine

Fida Chandio¹, Fozia Anwar², Akram M Zeki¹ and Seema Rizvi²

International Islamic University Malaysia

Abstract: This study explores the empirical relationship and importance of perceived usefulness, perceived ease of use and intention to use online information resources for Evidence-based Medicine (EBM). Although a significant literature is available that investigates the effect of various factors on intention to use digital information sources to practice EBM in developed countries. However, literature is lacking in exploring the intention to practice EBM by physicians in developing countries like Pakistan. This is the motivation behind this study. This research is a cross sectional quantitative survey study (N=352). Based on related literature a questionnaire was developed. Selected participant sample of the survey is those physicians, who were in clinical practice and were having the knowledge of EBM. Structural equation modelling technique (SEM) with the Analysis of Moment Structures software (AMOS) is used for data analysis. The findings showed the significance and causal linkage between perceived usefulness, perceived ease of use and intention to use online information resources for EBM.

Emotion Detection through Speech and Facial Expressions

Krishna Mohan Kudiri, Abas Md Said and M Yunus
Nayan

Universiti Teknologi PETRONAS, Malaysia

Abstract: Human machine interaction is one of the most burgeoning area of research in the field of information technology. To date a majority of research in this field has been conducted using unimodal and multimodal systems with asynchronous data. Because of the above, the improper synchronization, which has become a common problem, due to that, the system complexity increases and the system response time decreases. To counter this problem, a novel approach has been introduced to predict human emotions using human speech and facial expressions. The approach uses two feature vectors, namely, relative bin frequency coefficient (RBFC) and relative sub-image based coefficient (RSB) for speech and visual data respectively. Support vector machine with radial basis kernel is used for feature level classification based fusion technique between two modalities. The proposed novel approach has resulted in galvanizing results for a myriad of inputs and can be adapted to asynchronous data.

Decision Support System(DSS) Using System Dynamics Simulation Modelling for Projection of Dentist Supply

Azurah A Samah¹, Kee Wah Lau¹, Muhammad Ishak Desa¹, Hairudin Abdul Majid¹, Nordin Salleh², Azlina Abu Bakar², Nurulhuda Firdaus Mohd Azmi¹ and Adilius Manual³

¹Universiti Teknologi Malaysia, Malaysia

²Kementerian Kesihatan Malaysia, Malaysia

³Ministry of Health Malaysia, Malaysia

Abstract: This paper describes the development of a decision support system (DSS) using System Dynamic (SD) simulation approach to project and analyze the supply of dentist at both local and private Malaysian healthcare provider from 2015 to 2030. The project was driven by the need to provide sustainable, quality dental services in a complex environment given fluctuation dental graduate numbers, migration, attrition and activities. The developed DSS using VENSIM software describes in this paper is flexible and expandable. It can be used to monitor future changes in dental workforce and provide a comprehensive and structure policy analysis to policy maker and health managers, within the Ministry of Health Malaysia.

Palliative Care and ICT : A Review of the Literature

Noor Azizah Mohamadali, Lookman Ademola Adebisi
and Mira Kartiwi

International Islamic University Malaysia, Malaysia

Abstract: This paper presents the review of Palliative Care and ICT. Palliative care is becoming crucial all over the world as the ageing population is increasing from year to year. To help patients at the end of the life to have better quality of life, ICT intervention is needed. This paper first reviews palliative care in Malaysia and then discusses the ICT intervention in developed countries and argues that developing countries are still far from embracing ICT. Much research is needed to investigate the importance and needs of ICT for palliative care.

A Review of Ultrasound and Computed Tomography Registration Approaches

Samaneh Mazaheri¹, Puteri Suhaiza Binti Sulaiman¹,
Rahmita Wirza¹, Mohd Zamrin Dimon², Fatimah Khalid¹
and Rohollah Moosavi Tayebi¹

¹Universiti Putra Malaysia, Malaysia

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Abstract: Ultrasound is widely used in minimally invasive cardiac procedures due to its convenience of use and noninvasive nature. However, the low quality of ultrasound images often limits their utility as a means for guiding procedures, since it is often difficult to relate the images to their anatomical context. To improve the interpretability of the ultrasound images while maintaining ultrasound as a flexible anatomical and functional real time imaging modality, there is need for some registration techniques that integrate them with their correspond context in high quality pre-operative models such as magnetic resonance imaging or computed tomography images. It is a challenging and remarkable step as through registration, the combined information from multi-modal image acquisition systems such as ultrasound and computed tomography can be obtained by the medical practitioner for better physiological understanding, effective image guidance surgery, treatment, monitoring and diagnostic purposes. An overview of ultrasound and computed tomography registration techniques is presented in this paper.

Intelligent Agent based Operating Room Booking Simulation Module for Effective Scheduling of Operating Rooms

Alwin Kumar Rathinam

University Malaya, Malaysia

Abstract: The management of healthcare delivery in the operating room(OR) is a vital step towards ensuring proper patient diagnostics and treatment in a large scale team setting such as a hospital. The strong need for a computerized system to assist the caregivers to deliver a more organized, rapid and systematic treatment is essential to their workflow. Many existing Healthcare Information System (HIS) does not have comprehensive scheduling and some consists only of a calendar view. In this paper, we elucidate an OR booking simulation system which can be used to create and analyze patterns for the booking and running of ORs. The simulator was developed using multi intelligent independent agent method and concludes that OR booking is more complex than a calendar. The simulator is capable of being used in hospital setting to actually suggest changes which will improve the current workflow, reduce morbidity and result in better surgical outcome.

Conceptual Medical Events Extraction Framework Towards Generating Patient's Timeline

Nurfadhlin Mohd Sharef and Mahda Noura

Universiti Putra Malaysia, Malaysia

Abstract: Information about the patients timeline can be obtained from both the structured (e.g., patient database) and unstructured information (e.g., discharge summaries). The unstructured data is more challenging due to the inheritance of linguistic variations; therefore natural language processing techniques have been applied to compute the clinical narratives but a medical events extraction framework for this purpose is scarce. This paper presents a medical events extraction framework which combines medical events and temporal expression representation. The framework is going to be used for generating patients' timeline for further clinical decision making purpose.

A Review of 3D Reconstruction of Coronary Arteries based on co-Registration of IVUS and Angiography

Suhaili Beeran Kutty¹, Rahmita Wirza OK Rahmat² and
Sazzli Shahlan Kasim³

^{1,3} Universiti Teknologi MARA

² Universiti Putra Malaysia

Abstract: This paper presents a review of 3D reconstruction of coronary arteries based on co-registration of IVUS and coronary angiograms. This method has been proposed to ease the process of diagnosis and treatment for coronary artery disease, which is highlighted as a global disease. The purpose of this paper is to provide an introduction and understanding of the works that have been done. This paper consists of introduction, background of IVUS and angiography, the steps of the registration, and the process of 3D reconstruction.

3 Dimensional Reconstruction of Tricuspid Valve Using Transesophagel Echocardiography Images

Naziffa Raha Md Nasir , Rahmita Wirza OK Rahmat
Puteri Suhaiza Sulaiman, Suhaini Kadiman

Universiti Putra Malaysia

Abstract: This research aims to develop three dimensional geometrical tricuspid valve model using transesophagel echocardiography raw images (3DTEE). Main motivation that derives this research is the needs of volumetric image segmentation for surgical planning, post-surgical assessment, abnormality detection, and many other medical application. The challenge stands tall especially in regions with abnormal color and shape which needs to be identified by researchers for future studies. Volumetric images contain complicated structures that require precise and most accurate segmentation for diagnosis. Using Level set technique for segmentation, this research promising an accurate and better result that can be used for 3D tricuspid valve reconstruction. The solution of this research will be an alternative segmentation method to assist in surgical planning and indirectly eliminating the subjectively of manual segmentation.

Cardiac Components Categorization and Coronary Artery Enhancement in CT Angiography

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Puteri Suhaiza Sulaiman, Zamrin Diamond, Fatimah
Khalid and Samaneh Mazaheri

Universiti Putra Malaysia

Abstract: Coronary artery analysis is an important phase of each cardiac image processing system. Once physicians decide to check up coronary arteries and also other cardiac components in CT Angiography, it should be done precisely to give the correct information about them. In this paper we proposed a new method for cardiac components categorization, aorta segmentation, and coronary artery enhancement from CT Angiography images. This method is very helpful for the surgeon and cardiologist to have a clear view of each components and also to visualize coronary arteries prior to coronary artery bypass graft surgery or other types of cardiac treatments. To this end, firstly we constructed a proper mask based on Hounsfield Unit to categorize CT Angiography slices' components. Then aorta as an important component is segmented from initial slices. And finally coronary arteries are enhanced as tubular shape objects.

Controlling a digital Imaging and Communications in Medicine (DICOM) with finger gestures by using kinect camera

Zakiya Ali and Rahmita Wirza OK Rahmat

Universiti Putra Malaysia

Abstract: With the advances in medical imaging throughout the years, and became the surgeries and anatomy increasingly dependent on a set of digital imaging regulations Shipping, reference, diagnosis and documents. Controlled by Gesture showing promise, as it allows for touch-free element of computer systems control regulations. Conventional input devices that depend the physical contact can result in medical complications and potential pose a risk to each of the patients and staff during the surgery and autopsies. To overcome this problem I will present a system which allows the control of the open source Picture Archiving and Communication System (PACS) OsiriX by means of gesture that allows for gesture control of the DICOM viewer with finger gestures. To evaluate my project, I will give it to four medical professionals (one cardiology and three heart surgeon). The expected result for this project can be determined as follow: The system will require 4, 5 min to be able to use and Participants will give a good rate of 5 for the intuitiveness of the gestures and how well they can control die images.

Implementation Of Magic Box To Stimulate Mental Imagery And Play Activities Among Primary School Children

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Abstract: Augmented reality (AR) is a live direct or indirect view of a physical, real-world environment whose elements are augmented (or supplemented) by computer-generated sensory input such as sound, video, graphics or GPS data. AR system used to covering virtual elements on real box. By contrast, virtual reality replaces the real world with a simulated one. Kids have a huge benefit when compared to adults: They are very curious and adapt to new technologies quickly and joyfully. This project will present the design and implementation of an AR system to investigate the potential of AR as a specific external representation to stimulate internal mental imagery and play activities involving pretense. And it will provide insights of using developmental psychology literature to guide the design and evaluation of the AR system. As an expected result, the technology functions by enhancing one's current perception of reality and the Usability study results with normally developed children will be discussed. And this will be described by the Magic Box model, possible applications and children's response.

Neuro-signal Based Lie Detection

Rumeysa Cakmak and Akram M. Zeki

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Kuala Lumpur, Malaysia

Abstract: Polygraphs has been used for deception detection as an alternative way to provide proof for investigation, however the significant shortcoming occurs based on its reliability. In the present study, Multi-player neural network are used for bio-signal classification. The network consist of three layers- input layer, two hidden layers and one output layer which According to previous studies, it was found that 10-nodes in hidden layers give good results. For each group subject, features from STFT are computed, for each channel. Multi-layer Perception (MLP) is used for classification to differentiate between deception and truth types of EEG classes. The differentiation between deception and truth is achieved with accuracy of around 90%. By analyzing electroencephalograph (EEG) records can provide valuable insight and improved understanding of the mechanisms deception detection and criminal mind. Feature extractions were strong enough and mental processes linked with the activation of the frontal cortex. The participants in this experiment, were three healthy adolescents (male) students. Three students' alpha wave were collected while they play the Pokemon card and these card chosen in order to challenge participants during testing duration.

3-D images of myocardial model with Coronary artery angiography

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Shahlan Kasim

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Malaysia

Abstract: Coronary artery disease (CAD) has become one of the mostly occurring diseases in the world and has increasing trend in its incidence in the future. It is the cause of deaths in most Developed Countries. Despite the development of medical devices in obtaining images of the coronary arteries, such as, CTA, MRA, and ultrasound; Angiography still remain the gold standard because it gives real time results for Cardiologist. The purpose of this study is to obtain a three-dimensional model of the coronary arterial tree from angiography. Superimpose on the 3D virtual model of myocardial to give better patient education, understanding, compliance and to clarify Angiography result to patients. This study presents a method to show 3D images of myocardial model with Coronary artery angiography. We consider these steps as our works: firstly, segment the coronary artery, then make a 3D Virtual Model and finally superimpose the 3D Segmentation of the coronary artery on to heart model.

Medical Images Watermarking Scheme Using Wavelet Transform

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Abstract: Digital image watermarking have been developed widely in recent years. One of the most important applications of digital image watermarking is medical applications. Image watermarking can be used in medical images for several purposes. It's used to protect the patient's information from unauthorized people. In addition, it can be used for authentication if the patient lost his/her image. Moreover, it is needed to protect the copyright of the medical images. In this paper, discrete wavelet watermarking for medical images is proposed. The watermark is embedded in the 2nd level diagonal coefficient of the wavelet decomposition of the cover image.

Photo Fix in Automatic Face Reconstruction System

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Abstract: Through image is the best evidence in finding the offenders. Automatic Face Reconstruction will reconstruct the selection of facial part which are eyebrows, eyes, nose and mouth from a witness memory of the detective and generate a complete image automatically within a second. However, the result of the image is still low. This paper present Photo Fix in Automatic Face Reconstruction System, which is the enhancement of Automatic Face Reconstruction System where the effect of the image is added in order to produce the best quality of image. This will give an effective, sharp and accurate result in finding the offenders.

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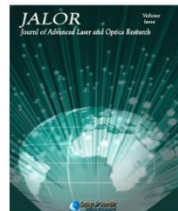
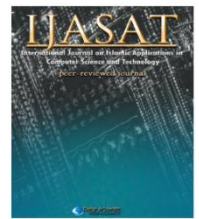
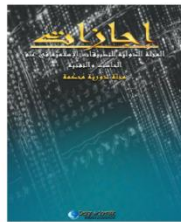
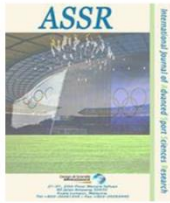


CASD Medical Sdn. Bhd. was incorporated in December 27, 2013 under Malaysia Company Act 1965 with the registration number of 1075506-X. A start-up company seeded from Universiti Putra Malaysia, CASD Medical serve the best in quality and reliability services and state-of-the-art technologies to cater the needs and expectations of the individual and organization in their information visualization and management activities. CASD Medical Sdn. Bhd. assist medical practitioner in making decision and visualize their information through the use of our product and technology. Whether you are a single person or a large business, we designed our system to suit and solve your problem.

CASD Medical Sdn Bhd believes that the team's holistic approach and vast research experience will place us at the forefront of Computer Assisted Healthcare System today. It is the aim of this company to offer clinical practitioner a feature rich solution.

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