3rd International Conference on Computer Assisted Systems in Health

2018

1st & 2nd September

Palace of the Golden Horses
Mines Wellness City
Selangor, Malaysia

International Conference on

Computer Assisted Systems in Health

CASH2018

GENERAL CHAIR FOREWORD

It is with my pleasure to write this foreword for the proceedings of the International Conference on Computer Assisted Systems in Health (CASH) 2018. We are delighted co-hosting CASH 2018 together with Design for Scientific and Renaissance (DSR).

Observing the high quality of the papers submitted represent the thinking and collaboration among computer and medical expert. Their collaborations helped to make their contributions outstanding and contributed to the most recent scientific knowledge. I do hope that these proceeding will be furnished to scientific groups and renowned as an excellent references document. I also trust that it will motivate and stimulate further study and research in all related areas.

The main intention of collaboration between two major fields; computer scientist and medical practitioner, is to contribute to society and produce products computer related that will able to automate medical procedure and assist the task of medical practitioner. This vision has moderately expressed itself in the enthusiasm with fine result of Computer Assisted Surgery and Medical Imaging to facilitate the tasks of clinicians with shorten the medical procedure time for each patient and ensure that close cooperation can realize more sophisticated computer systems.

Thank you very much for attending and participating CASH 2018 conference. I would really 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 expanding community, Computer Assisted Systems in Health.

General Chair

Prof. Dr. Rahmita Wirza O.K. Rahmat

International Conference on Computer Assisted Systems in Health – CASH 2018

Background

The International Conference on Computer Assisted Systems 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 procedures and enhance related clinical database management systems. 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 2018 holds from September 1-2, 2018 at Palace of the Golden Horses, Selangor, Malaysia. The conference program consists of high-profile plenary/keynote lectures, workshops, invited sessions, oral and poster sessions, and exhibitions.

Committees

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Prof. Dr. Abu Bakar Md. Sultan, Universiti Putra Malaysia, Malaysia

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Prof. Dr. Rahmita Wirza O.K. Rahmat, Universiti Putra Malaysia, Malaysia

Publication Chair

Dr. Waleed Mugahed Al-Rahmi, University Technology Malaysia, Malaysia

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- A.P. Dr. Akram M. Zeki, International Islamic University Malaysia, Malaysia.
- Dr. Hasan Hadi Khaleel, Ashur University College, Al-Wazireya, Baghdad, Iraq
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- Dr. Puteri Suhaiza Sulaiman, Universiti Putra Malaysia, Malaysia.
- Dr. Mas Rina Mustaffa, Universiti Putra Malaysia, Malaysia.
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- Dr. Ng Seng Beng, Universiti Putra Malaysia, Malaysia.
- Dr. Nurul Amelina Nasharuddin, Universiti Putra Malaysia, Malaysia.
- Dr. Siti Khadijah Ali, Universiti Putra Malaysia, Malaysia.
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- Dr. Normalia Samian, Universiti Putra Malaysia, Malaysia.
- Dr. Aziah Asmawi, Universiti Putra Malaysia, Malaysia.
- Dr. Azrina Binti Kamaruddin, Universiti Putra Malaysia, Malaysia.
- Dr. Fakhrul Hazman Yusoff, UITM-Shah Alam, Malaysia.
- Dr. Masitah Ghazali, UTM, Malaysia.
- Dr. Mohammad Said El-Bashir, Al al-Bayt University, Jordan.

- Dr. Chen Soong Der, UNITEN, Malaysia.
- DR. Ng Kok Why, Faculty of Computing and Informatics (FCI), Multimedia University (MMU), Malaysia.
- Hasan Ali Sari, Universiti Tenaga national (UNITEN), Malaysia.
- Ms. Masyura Ahmad Fauzi, UNITEN, Malaysia.
- Mrs. Naziffa Raha binti Md Nasir UNITEN, Malaysia.
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- Wael Jabbar Abed Al-nidawi, Almustaqbal University College, Iraq.
- Mohammed Salem Mohammed Atoum, Irbid National University, Jordan.
- Hamid Ali Abed Alasadi, Basra University, Iraq.
- Muhammad Mujtaba Asad, Universiti Tun Hussein Onn Malaysia (UTHM), Malaysia.
- Fasee Ullah, Sarhad University of Science and Information Technology, Pakistan.
- Nor Hazlyna Harun, School of Computing, Universiti Utara Malaysia, Malaysia.

Publications of CASH Conference

Selected papers will be published in the following Journals.

- Journal of Engineering Science & Technology (SCOPUS)
- International Journal of Economics and Management (SCOPUS)
- TELKOMNIKA (Telecommunication Computing Electronics and Control) (SCOPUS)
- Journal of Advanced Medical Research
- Journal of Advanced Science and Engineering Research
- Journal of Advanced Computer Science and Technology Research
- Journal of Advanced Biomedical & Pathbiology Research
- International Review of Management and Marketing
- International Journal of Economics and Financial Issues
- International Journal of Asian Social Science

Conference Schedule

International Conference on Computer Assisted Systems in Health - CASH 2018

The Conference will be in Palace of the Golden Horses Jalan Kuda Emas, Mines Wellness City, 43300 Seri Kembangan, Selangor, Malaysia. Tel : + 60 (3) 8946 4888 http://www.palaceofthegoldenhorses.com.my/

Saturday 1st September 2018

18:00 Registration at Palace of the Golden Horses

Sunday 2nd September 2018

07:30 - 08:00 Registration at Palace of the Golden Horses
08:00 - 09:45 Workshop 1
09:45 - 10:00 Refreshment
10:00 - 10:30 Opening Ceremony
Opening by Master of Ceremony
Quran Recitation
Welcoming Speech 1
Welcoming Speech 2
Multimedia Presentation
Gift Exchange
End of Opening Ceremony
Photo Session
10:30 - 11:00 Keynote Speech 1
11:00 - 11:30 Keynote Speech 2
11:30 - 13:00 Session 1
13:00 - 14:00 Lunch & Zuhr Prayer
14:00 - 15:45 Workshop 2
15:45 - 16:00 Refreshment
16:00 - 17:30 Session 2
17:30 - 18:15 Seminar
18:15 - 18:30 Closing Ceremony with best paper awards

KEYNOTE SPEAKER 1

Dr Pawel Suwinski
Head of the Healthcare Advisory Department at Malaysian Genomics Resource Centre Berhad

Topic: Improving Clinical Outcomes through Big Data Integration: Latest Trends and Future Consideration

Abstract: Recent advances in life sciences technologies allow researchers to probe life processes at the sub-cellular and molecular levels, providing new insights into the physiological perturbations that lead to the development of diseases. In the process, a large amount of data is generated at each level of biological networks: genomics, proteomics, metabolomics, metagenomics, and phenomics (Omics). Many of the findings from each set of data have been translated into the development of novel prognostics and therapeutic products for diverse type of diseases. Although they proved to be more effective to existing strategies, there were medical conditions that have not shown the benefits as expected. It became apparent that all types of data need to be linked, including environmental factors to obtain a full understanding of the processes that give rise to pathological changes and ageing. Information technology is a key platform for collecting, integrating, storing, and processing of biological information. It also provides the "last mile" in information flow: the prediction of most likely outcomes given a particular set of biological networks. This presentation will look at the present practices, and possible future developments with regards to Omics empowered translational medicine.

Biography: Dr Pawel Suwinski is a medical professional with extensive knowledge and experience in clinical genomics, bioinformatics, healthcare informatics and economics. He is currently working with Malaysian Genomics Resource Centre Berhad as a clinical geneticist and medical bioinformatician. Prior to MGRC, he was a Principal Consultant with the Frost & Sullivan Asia Pacific, leading Healthcare Practice Division that focused on monitoring and analysing healthcare and life sciences emerging trends, technologies and market behaviour. Previous professional engagements included:

- Clinical practice (internal medicine, emergency medicine Poland & Malaysia)
- Healthcare Information Technology consultant
- Healthcare economists Clinical Geneticist (molecular geneticist and bioinformatician)

KEYNOTE SPEAKER 2

Prof. Dr. Imad Fakhri Taha
Head of Research
Kuliyyah of Information and Communication Technology,
IIUM

Topic: Scientific Research in View of Quran and the Creation of Allah s w t

Abstract: Scientific research is the backbone of all discoveries, inventions, and creation of facts, ideas, reasons, devices, tools, … . One of the main sources of doing a good research is having access to good, comprehensive, reliable, and up to date references, which can be a problem in many cases. In this talk I will try to show the importance of the holy book Quran as the best reference of the past, present, and future, giving examples of some proved cases from Quran.

In addition to highlight the importance of having insight of the creation of the creator like ourselves, surrounding world, other creations as a means of advancing our lives. Our own research results will be shown too. Examples will be given from Quran and from the creation of the creator as well as some examples of what can be investigated in future.

Biography: Professor Dr. Imad Fakhri Taha is an IEEE senior member, obtained his BSc (Hon) in Mathematics, MSc in Computer Science from Iraq, and PhD degree from Pune University, India, 2000. In 2003, he was appointed as the head of department of computer information systems at Alrafidain University College until 2005. Then he joined Gulf university- Bahrain January 2006 and appointed as the founding Dean of the college of computer engineering and sciences, during this period he introduced the CCNA certificate to be part of the curriculum which had a strong impact on the students' career. In November 2010 he joined IIUM at the Dept. of Computer Science/ kulliyyah of Information and Communication Technology. He received the best teacher award in 2011. He is the editor in chief of JACSTR (international Journal on Advanced Computer Science and Technology Research) since 2011 till now and IJPCC international journal since 2015, and the general chair of the international conference on Advanced Computer Science Applications and Technologies) since 2012 till now. He obtained a US patent for his work with his PhD student on smart traffic light with accident detection system on 2nd Dec 2014. Prof. Imad has published more than 200 articles, conference papers, and book chapters in addition to three books. In addition, he secured more than 10 research grants. Presently Prof. Dr Imad is a Professor at the Department of Computer Science and Head of Research at the Kulliyyah of Information and Communications Technology, the International Islamic University Malaysia (IIUM) since 1st November 2013.

CASH 2018 Seminar on

Business Process Improvement for Healthcare system

Background:

The objective of this seminar is to identify high level business processes in that are candidate for improvement opportunity on the other processes, these business process can be implemented in different areas as well as in medical field. The seminar will cover the importance of Business Process Improvement and the Knowledgeable BPI champion in general with more focus on healthcare system, the seminar will also discuss how to Create Overall Process Map in healthcare system and the Process Improvement Stages such as: Process analysis, Improvement identification, Process change introduction, Process change training and Change tuning. Finally the seminar will explore the Business Process Lifecycle in general and Process Analysis and Modeling in healthcare.

About the Speaker

Dr. Abdulrahman A. Gharamah (PhD in Information System from International Islamic University Malaysia) is a certified skilled trainer, process-driven professional and self-motivated individual who is continuously exploring new ventures and challenges. More than three decades of Information Technology (IT) industry experience built on higher education and value-added business practices at the world's largest oil producer company –Saudi Aramco. A responsible Saudi Arabian citizen who wants to contribute to his nation, society, education and mankind with his vast wealth of experience, talents and diverse knowledge accumulated over years and solidified with high degree.

Augmented Reality Workshop

Instructors:

	
Name : Che Nur Shafareen Afera Bt Che Anuar Master of Sciences (Multimedia Computing @ UPM)	Name: Muhammad Adli Bin Md Isa Augmented Reality Developer @ Media Karangkraf

All participants will get the (AR Workshop) contains: (Augmented Reality With Marker/ Unity Installer Version 5.6.3 / Unity Package File (Vuforia Unity 6-2-10) / Marker Image .jpg or .png / 3D Model (.3ds or .fbx))

What we are going to learn:

2) How to to install Unity on their laptop
3) Sign Up Vuforia account at https://developer.vuforia.com/
4) Proceed to develop AR
5) How to upload the Image Target in Vuforia website and how to get the License number each of Image Target(marker).
6) How to import the 3D model into Unity and display that model through AR.
7) How to animate the model (simple animation) and insert audio background.

Accepted Papers

Accurate Binary Conversion Method based on Illumination Distribution Model under Unconstrained Smartphone Face Database

Noor Amjed, Fatimah Khalid, Rahmita Wirza and Hizmawati Madzin

Abstract: One of the most important methods to extract unique features for distinguished several classes in face recognition is by generating a binary image from the original image, which is then used as input in the feature extraction process. In face recognition scenario, illumination variation is a challenging problem due to the dramatically changes of face appearance depending on the illumination conditions. It has a major effect on the clarity of binary image, where most of the binary image conversion methods had failed under the effect of these conditions. Therefore, to deal with this problem effectively, a model of illumination distribution over a whole image is proposed, this model is based on the polynomial function and it is used as an input for proposed binary conversion method which starts by calculating an adaptive threshold value depending on the illumination model and converts the image by comparing each column pixels individually with the adaptive threshold value. The proposed method works by making evaluation on smartphone face video dataset and comparing with the Global image threshold using Otsu's method. The experimental results showed the outperformance of proposed method.

Evaluation of Morphological Operation Structure Elements for Eggs Identification in Gonad Ultrasound Image

Hizmawati Madzin, Nurul Asmaa Abd Razak, Mas Rina Mustaffa Mustaffa and Fatimah Khalid

Abstract: Radiology imaging technology such as ultrasound image, computed tomography (CT), magnetic resonance imaging (MRI) and plain x-rays are commonly used in medical treatment in term of to diagnose and treat disease. Radiology imaging also can be used in aquaculture field where ultrasound image is used to identify eggs in fish gonad. However due to the characteristic of the eggs in the gonad ultrasound image is small and different size at the same time lead to difficulties in identifying the eggs. Based on these characteristics, the morphological-based segmentation is applicable in segmenting the eggs in ultrasound image because this method is useful for describe and segment the region shape especially in the small objects.

Kinematics and Dynamics Representation Study of Upper-Limb Exoskeleton

Siti Khadijah Ali and M. Osman Tokhi

Abstract: Muscle fatigue is a common problem in humans. One of the solution to deal with the fatigue is by employing the exoskeleton. However, it is essential to study of the kinematics and the dynamics of the exoskeleton. The objective of this paper is to study the dynamics of the developed exoskeleton for the purpose of control design. The Denavit-hartenberg and closed form solution are implemented to study the forward and inverse kinematics. The Euler-Lagrange approach is used to develop the dynamic system of the exoskeleton. The comparative study using Simmechanics in terms of the torque required is used to validate the dynamics representation. The results show that the torque generated from the Euler-Lagrange were similar in shape with the Simmechanics.

Overlapping Coronary Vessels in Angiography- A Review

Mahmood Omar

Abstract: Overlapping of the coronary artery vessel in the X-Ray angiography image is one of the issues can affect the result of segmentation angiography imaging and reconstruction techniques. Many publications can be found in the literature that presents the problem of overlapping coronary artery vessel in the X-Ray angiography image. However, to the best of our knowledge, there is not any review or survey confirmation of this problem in one paper. In this paper, we survey those papers that mention the overlapping coronary artery's problem in X-Ray angiography image collected from C-arm, with respect to the purpose of usage of the X-Ray angiography image.

E-Care Mobile Application for Elders and Disables

M. Al-Shabi, Liaqat Ali Rahimi and Akram M Zeki

Abstract: Applications have become ubiquitous in many aspects of our lives over the few years fueled by the widespread availability of tablets and smartphones. Hence, the emergence of various applications available in the market now has facilitated our daily tasks. Nowadays, the population of elderly and disabled person is increasing worldwide and they often need assistance in their daily activities. This paper proposed a support system application that particularly for the elderly and person with disabilities in seeking for the help in their daily routine. Elder care (ECare) is an Android-based application in which the main function is to help elders and people with disabilities to seek for assistance from their guardians to perform some tasks in their daily activities and needs.

Towards Outpatient Satisfaction at UiTM Health Centre

Faridah Abdul Halim and Muhammad Rozi Malim

Abstract: Patient satisfaction is an important indicator and commonly used to measure the quality of healthcare services. The objective of this study is to assess the patient satisfaction at the Medical Outpatient Clinic, UiTM Shah Alam Health Centre. The study was carry out in two stages; face-to-face interviews with the patients regarding satisfaction towards facilities, staff, and waiting line at the clinic, and observation on the queuing system based on a queuing model. The queuing data were recorded for four days (Monday to Thursday). A single-line multiple-channel queuing model was considered. From face-to-face interviews, the majority of patients (67%) were satisfied with the facilities, staff and waiting time at the clinic; however, 39% claimed that the waiting time was too long. The results estimated from the queuing data showed otherwise; the maximum number of patients in queue was 4.36 and the maximum average time in queue was 9.98 minutes. These results were supported by the theoretical values of the queuing model. Hence, there was no issue regarding the waiting time. It can be concluded that UiTM Shah Alam Health Centre is providing good healthcare services to UiTM staff and students with a good level of satisfaction.

Slinky-based Segmentation on 3D Polygonal Model for Functional Parts in Computer Graphics

Kok-Why Ng and Junaidi Abdullah

Abstract: Segmenting three-dimensional (3D) polygonal model into meaningful functional parts is greatly debated in year 2010. Yet, there is no robust segmentation algorithm as to satisfactorily match the result to the human desired segments. This paper breaks the model into human definable functional parts (or features). The proposed method first shrinks the model into triangular-skeleton by Laplacian-based contraction method. The edge-collapsed and vertex-merging of simplification are applied to turn the skeleton into single-connected edges and merge the linear skeleton nodes for fast processing respectively. Slinky-based segmentation method is applied to investigate the contour and segment both the periphery and centered features. The generated result is compared to the seven well-known segmentation methods and the results are consistent and stable throughout all the models.

Modelling of Horizontal Flexible Plate Structure Using Evolutionary Swarm Algorithm

Siti Khadijah Ali, Muhamad Sukri Hadi and Intan Zaurah Mat Darus

Abstract: This paper presents the performance of system identification for modelling the horizontal flexible plate system using artificial bee colony and bat algorithms. Initially, the experimental rig of flexible plate was designed and fabricated with all edges clamped boundary condition at the horizontal position. Then, the instrumentation and data acquisition systems were integrated into the rig for acquiring the input-output vibration experimentally. The collected data in the experiment will be used later for modelling the dynamic system of horizontal flexible plate system using system identification. The effectiveness of the developed model will be validated using mean squared error, one step ahead prediction, correlation tests and pole zero diagram stability. The estimated of the developed models were found are acceptable and possible to be used as a platform of controller development for vibration suppression of the undesirable vibration in the flexible plate structure. It was found that the artificial bee colony algorithm has performed better in this study by achieving the lowest mean squared error, good correlation test and high stability in the pole zero diagram.

Studies of Gender-Based Virtual Reality Stress Relaxation Therapy Using Guided Navigation Process

Azmi Mohd Yusof and Mutahir Mohamed Ariff

Abstract: Stress is often considered as a part and parcel of human life. Statistically, stress cases are increasing at an alarming rate in many developing countries including Malaysia. Humans can only cope with stress for short periods of time, of which when subjected to prolonged durations they would then start to exhibit signs of worry, fear, anxiousness, depression and frustration amongst others. Chronic stress eventually kicks in, affecting their everyday lives and actions. Men and women are known to have very similar stress triggers. When dealing with stress exhibited in others, men tend to take a very egocentric approach in which they would conserve their energy and ignore the needs of the stressed person. Women however, adopt a "tend and befriend" approach in which they try to better understand the stressed person's perspectives and the reasons behind the cause of the stress. As of late, several methods for stress therapy has been practiced in treating patients which includes the prescription of drugs, hypnosis, counseling, and relaxation. In this paper, we present a non-traditional method based on a virtual reality (VR) technology that is used to remedy stress problems. The method is called 'guided' navigation VR relaxation stress therapy in which the participant's movements throughout the course of therapy is preordained by the system. This study aims to compare the effectiveness of this method between men and women subjects and whether the same type of navigation technique can be applied under this specific domain of stress therapy.

3D Medical Illustration Approach using real Patient Dataset

Puteri Suhaiza, Rahmita Wirza and Ramlan Mahmood

Abstract: Traditionally, there are three primary 3D rendering techniques applied to medical data which are surface rendering, volume rendering and maximum intensity projection (MIP). However, current medical society looks into non-photorealistic rendering (NPR), which offers a more interesting way to represent 3D medical data. The NPR techniques can adapt hand drawn medical illustration style such as water colour and pen and ink illustration. Another advantage of medical illustration in NPR is the capability to effectively present information and provide a familiar environment to medical practitioner had been trained with similar images for years. However, most of the NPR methods purpose such pen and ink, hatching and stippling and cartooning are based on standard medical data set. This paper investigation to see the impact of NPR techniques representing a real patient's CT scan dataset. A new medical illustration shading is introduced, which adds an opacity variable to the traditional Phong shading. These illustration styles are implemented using the GL shading language, where each of the illustration algorithms is transformed to programmable vertex and fragment shader. Based on the questionnaire conducted, the medical illustration styles is preferred compared the traditional shading style. The overall rendering performances for all the medical illustration styles are above 37 fps which fulfill the real time rendering requirement.

Virtual Buttons Interaction for Medical Learning Interfaces

Che Nur Shafareen Afera Che Anuar, Rahmita Wirza, Azrina Kamaruddin, Rafidah Hod and Siti Khadijah Adam

Abstract: this paper presents an interaction method for wearable AR (augmented reality) by using VR Box with virtual buttons. It is introduces an Android applications that could help medical students in their learning. Anatomy education is traditionally performed by the dissection of cadavers. This AR technology could offer an additional teaching method for anatomy education, depending on how it is implemented. Studying AR in medical education could provide benefits for medical education and provide students a more personalized and exploration in learning experiences. Virtual buttons interaction in this application to make more natural gesture while wearing the wearable AR device.

Stereoscopic Augmented Reality Approach for Brain Anatomy Learning: A Literature Review

Nur Athirah Hassan Basri, Rahmita Wirza and Hizmawati Madzin

Abstract: Augmented reality (AR) has a potential as a new generation technology that attracted the attention of educators. The mixed of AR technology in educational content enhance the capability and attractiveness of learning for students in real life. Learning and teaching anatomy is a difficult task, partially due to the complexity of the subject and limitations of traditional pedagogic methods such as lectures, textbooks, laboratory, and anatomical dissections. This paper presents a literature review for further exploration on a stereoscopic augmented reality approach for brain anatomy learning. The intend work is potential users will interact with the system and the 3D model of brain anatomy by using VR box and VR controller. However, implementing 3D model in stereoscopic augmented reality to visualize the inner part of brain anatomy is challenging especially involve interaction between user. The 3D reconstruction based on multi-view will be used to develop high accuracy and moderate level of details that will suit AR visualization.

Save Heart to save Live: An Application to Help Heart Attack Victims Find Faster Emergency Response

Ahmad Masih Niaz, Akram M Zeki and Abdulrahman Gharamah

Abstract: The emergence of the mobile communications devices such as smartphones and tablet computers has contributed to the rapid growth in the use of mobile-enabled applications that collect or deliver healthcare information and data. The used of applications have become widespread in many aspects has facilitated our daily tasks. A mobile application named as "Save Heart" is expected to help their users (patients) to get the immediate medical attention and response from the medical personnel as they need. Consequently, this paper will describe the development of a mobile application used to aid the heart attack victims seek for a faster emergency response.

Notes

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.

CASD Medical Sdn. Bhd

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.

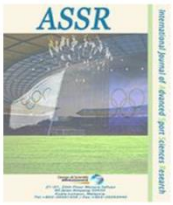
CASD Medical Sdn Bhd believes that the team's holistic approach and vast research experience will place us at the forefront of Computer Assisted Healthcare System today. It is the aim of this company to offer clinical practitioner a feature rich solution.

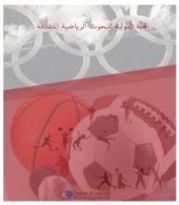
CASH 2014

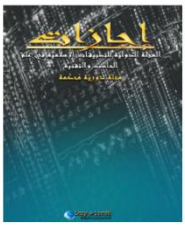
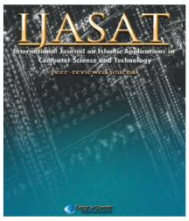
19-21 December 2014 Putrajaya, Malaysia

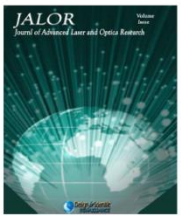
CASH 2016

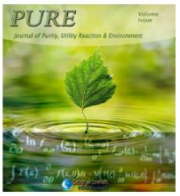
1-2 September 2016 Kuala Lumpur, Malaysia

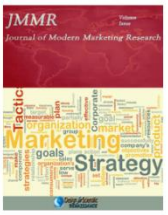










2nd Floor, Block C Excella Business Park, Jalan Ampang Putra, Taman Ampang Hilir, 55100 KL.
Tel : +603 4217 0322
Email: info@dsr.edu.my / Website: http://dsr.edu.my/

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