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Foreword from the Dean of the School of Computer Sciences

Assoc. Prof. Dr Rosni Abdullah
Advisor of CSPC'07
Dean of School of Computer Sciences, USM

On behalf of the School of Computer Sciences, I would like to express my appreciation to the Colloquium's Organizing Committee for their effort in organizing such a big event. I would also like to welcome all participants to the Computer Science Postgraduate Colloquium 2007.

This colloquium is intended to motivate the postgraduates into becoming future researchers, academicians as well as industrialists. Serving as a platform where research ideas converge, this will provide an opportunity towards the development of new research venture. We also produce high quality postgraduates to serve the industry, and this will contribute not only to our country but also to the global market.

The theme of the colloquium – "Bridging Academic and Industry Research" shows our commitment in preparing our graduates with the essential and required skills to match industry needs and at the same time actively participate in research intensive areas. We hope this colloquium serves as a knowledge exchange hub where academicians, postgraduate and industry alike can share their knowledge and gather better insight towards new and emerging technologies.

I would like to take this opportunity to express my appreciation to the speakers, presenters, authors, reviewers, the colloquium's organizing committee and the School of Computer Sciences, USM for their effort to ensure the success of this colloquium. With anticipation, we are looking forward to events like this as a regular event to show persistence of skills and knowledge sharing among the postgraduate students and the academicians.

Objectives of CSPC'07

The **Computer Science Postgraduate Colloquium 2007** (CSPC'07) welcomes School of Computer Sciences' postgraduates to share their research progress or findings. Postgraduates are required to submit a paper describing their current research or progress that have been made thus far. Papers selected for CSPC'07 are not gauged on their technical content, rather this colloquium provides an equal platform for postgraduates to gain experience paper submission and presentation of their work. CSPC'07 will also feature keynote lectures by selected speakers who will share their knowledge on specific topics and by conducting workshops.

As the theme suggests, this colloquium will focus on how to bridge the industry and academia for possible joint research. Highlights of this colloquium include:

- Talks From the Industry
- Oral Presentation Sessions
- Poster Session
- Postgraduate Forum
- Workshop

CSPC'07 Program

Day 1: 25th June 2007

0800−0930	Registration
0900−0920	Opening Ceremony
0920−1020	Talk 1: *Research into Commercialization – A Success Story from a PPSKomp Graduate* by Mr Bryan Gan C.D. (ComDev)
1020−1040	**Tea Break (at Foyer)**
1040−1140	Talk 2: *Thesis Writing* by Prof. Dr Zaharin Yusoff
1140−1240	Talk 3: *Drawing the Best out of Software Engineers* by Mr Michael Song (Motorola)
1240−1400	**Lunch (at Dewan Banquet)**
1400−1500	Parallel Presentation Session 1 (DK A): AI02, NC08, AI05 Parallel Presentation Session 2 (DK B): HI01, HI02, IS01 Parallel Presentation Session 3 (DK C): NC01, NC02, NC03
1500−1510	**Short Break**
1510−1610	Parallel Presentation Session 4 (DK A): AI06, AI07, AI08 Parallel Presentation Session 5 (DK B): PD01, PD02, PD04 Parallel Presentation Session 6 (DK C): NC04, NC06, NC07
1610−1630	**Tea Break (at Foyer)**
1630−1730	Parallel Presentation Session 7 (DK A): AI09, AI10, AI11 Parallel Presentation Session 8 (DK B): PD05, PD06, SE02 Parallel Presentation Session 9 (DK C): AI04, OR01, OR05

Day 2: 26th June 2007

0900−1000	Talk 4: *Security Threat Information Analysis and Defenses Evolution* by Mr Mohammed Fadhil Haron (Intel)
1000−1100	Forum: *Life as a Research Student* Panel: Assoc. Prof. Dr Tang Enya Kong, Dr Nasriah Zakaria, Mr Abdul Latif Saleh Nasser Ghallab, Mr Usman Sarwar Moderator: Dr Ranaivo-Malançon Bali
1100−1120	**Tea Break (at Foyer)**
1120−1220	Talk 5: *Viva Session* by Assoc. Prof. Dr Ahamad Tajudin Khader
1220−1250	Poster Session: AI01, AI03, NL01, NL02, NL03, PD03, NC05, MU02, SE01,OR02, OR03, OR04, OR06, OR08, OR10, OR11, OR12 (Judges: Mr Azlan Osman, Ms Faten Damanhoori, Mr G.C. Sodhy, Ms Umi Kalsom Yusof)
1250−1400	**Lunch (at Dewan Banquet)**
1400−1520	Workshop: *Introduction to LaTeX* by Ms Lim Lian Tze
1520−1600	Parallel Presentation Session 10 (DK A): AI12, AI13, AI14 Parallel Presentation Session 11 (DK B): AI17, AI18 Parallel Presentation Session 12 (DK C): MU04, OR07
1600−1630	Tea Break (at Foyer)
1630−1730	Parallel Presentation Session 13 (DK A): AI15, AI16 Parallel Presentation Session 14 (DK B): MU01, MU03 Parallel Presentation Session 15 (DK C): OR09, IS02
1730−1745	**Closing Ceremony and Best Paper Award**

Parallel Presentation Details

Parallel Presentation Session (Day 1: 25th June)
Venue: Dewan Kuliah A

1400−1500 **SESSION 1** (CHAIRPERSON: DR SHAHIDA SULAIMAN)

- **AI02** Integrating Crew Details Criterion for Team Oriented
  Presenter: Farizah Azmah Ridzuan
- **NC08** Wireless Sensor Networks: An Introduction
  Presenter: Ala' Abdullah
- **AI05** Identifying and Quantifying Rare Hypothesis in an Agent's Prediction
  Presenter: Davinna Jeremiah

1500−1510 *Short Break*

1510−1610 **SESSION 4** (CHAIRPERSON: MR AZLAN OSMAN)

- **AI06** Image Processing Approach to Brain Volume Calculation
  Presenter: Mahmoud Jawarneh
- **AI07** Plan Nutritious Menu Using Genetic Algorithm
  Presenter: Maziah Salleh
- **AI08** A Multiplexor-based Framework For Generic Data Mining
  Presenter: Shailendra Singh

1610−1630 *Tea Break (at Foyer)*

1630−1730 **SESSION 7** (CHAIRPERSON: MS MAZIANI SABUDIN)

- **AI09** Using Ontology in Image Processing: Framework
  Presenter: Ahmad Abu Shareha
- **AI10** A Software Tool for Underwater Video Enhancement
  Presenter: Kashif Iqbal
- **AI11** A Study on Integrating Genetic Level and Neuronal Level in Brain Modeling and Intelligent Machines
  Presenter: Muhammad Fermi Pasha

Parallel Presentation Session (Day 1: 25th June)
Venue: Dewan Kuliah B

1400−1500 **SESSION 2** (CHAIRPERSON: DR RAHMAT BUDIARTO)

- **HI01** Discovering Novel Knowledge from Medical Documents: Leveraging Knowledge Acquisition for Structured and Unstructured Knowledge Sources in Automated Case Base Enrichment
  Presenter: Selvakumar Manickam
- **HI02** An Ontology and Constraint-based Approach for Dynamic Personalized Planning
  Presenter: Normadiah Mahiddin
- **IS01** Approaches to Enhancing RosettaNet Standards Component

Presenter: Tin Tin Ting

1500–1510 *Short Break*

1510–1610 **SESSION 5** (CHAIRPERSON: DR BAHARI BELATON)

PD01 ELECTRE III in Virtual Organization Grid Policy Creative Agent Negotiation
Presenter: Cheng Wai Khuen

PD02 Dynamic Image Allocation Algorithm
Presenter: Aloysius Indrayanto

PD04 Simple Belief Revision for Jadex Agent
Presenter: Ng Wan Chia

1610–1630 *Tea Break (at Foyer)*

1630–1730 **SESSION 8** (CHAIRPERSON: MR MOHD. AZAM OSMAN)

PD05 Developing Mobile Phone Distributed Applications, Limitations and Considerations
Presenter: Ali Kattan

PD06 Applying Mobile Agents on Mobile Grid Computing
Presenter: Homam El-Taj

SE02 GUI layout design for a better interface to improve software understanding
Presenter: Rozita Kadar

Parallel Presentation Session (Day 1: 25th June)
Venue: Dewan Kuliah C

1400–1500 **SESSION 3** (CHAIRPERSON: ASSOC. PROF. DR MANDAVA RAJESWARI)

NC01 Comparison Study Among Routing Protocols (RIP, OSPF and BGP) of IPv4 vs IPv6 Environment
Presenter: Wafaa Alsalihy

NC02 Overhead Minimization in Nested NEMO
Presenter: Monther Enayah

NC03 Handling Transmission Error for IPv6 Packets over Fiber Optic Links
Presenter: Supriyanto

1500–1510 *Short Break*

1510–1610 **SESSION 6** (CHAIRPERSON: MS FATEN DAMANHOORI)

NC04 Defending Servers against Naptha Attack
Presenter: Han Pin Cheng

NC06 Linguistic Steganography: A Potential of Malay Language Steganography
Presenter: Roshidi Din

NC07 Network Address Translation (NAT) From Termianal Client to Termianal Client
Presenter: Hala Ibrahim

1610–1630 *Tea Break (at Foyer)*

1630–1730 **SESSION 9** (CHAIRPERSON: DR PUTRA SUMARI)

AI04 Agent-Based Simulation of Pedestrian Movements in Masjid Al-Haram

Presenter: Siamak Sarmady

OR01 Evaluating The Location of Middle East and East Africa Ports Using Data Envelopment Analysis (DEA)
Presenter: Ahmed Salem Al-Eraqi

OR05 Neuro-Fuzzy and Intrusion Detection: A Survey
Presenter: Mahmoud Jazzar

Parallel Presentation Session (Day 2: 26th June)
Venue: Dewan Kuliah A

1520–1620 **SESSION 10** (CHAIRPERSON: DR YAP FA TOH)

AI12 Analysis of Live Cell Images: A Framework
Presenter: Muhammad Tariq Siddique

AI13 Fish Recognition and Classification Using Statistical Approach
Presenter: Humera Farooq

AI14 Image Segmentation Techniques for Fish Recognition
Presenter: Ali Bin Samma

1620–1650 *Tea Break (at Foyer)*

1650–1730 **SESSION 13** (CHAIRPERSON: DR FAZILAH HARON)

AI15 Enhancement of Learning Process for Robot Behaviors in Simulated Environment
Presenter: Saeed Baneamoon

AI16 Arabic Number Recognition Using Neural Network
Presenter: Saleh Al-Omari

Parallel Presentation Session (Day 2: 26th June)
Venue: Dewan Kuliah B

1520–1620 **SESSION 11** (CHAIRPERSON: MS NORLIA MUSTAFFA)

AI17 Solving the NP-hard Combinatorial Optimization Problem Using Ant Colony Optimization Metaheuristic and its Application
Presenter: Jamaludin Sallim

AI18 Implementation of the Proposed Translation Protocol between RSW Control Criteria and SIP Standards
Presenter: Mahammed Eessa

1620–1650 *Tea Break (at Foyer)*

1650–1730 **SESSION 14** (CHAIRPERSON: DR VINCENT KHOO KAY TEONG)

MU01 UML-based Hypermedia Design Method: A Review on Design Processes and Modeling Elements
Presenter: Azrul Hazri Jantan

MU03 Mobile Video-on-Demand in Wireless Ad-hoc Networks
Presenter: Amir Rizaan Abdul Rahiman

Parallel Presentation Session (Day 2: 26th June)
Venue: Dewan Kuliah C

1520–1620 **SESSION 12** (CHAIRPERSON: DR CHAN HUAH YONG)

MU04 Multi-modal Fusion for Video Analysis: An Overview
Presenter: Alfian Abdul Halin

OR07 A Review of Automatic Image Annotation and its Applications
Presenter: Noridayu Manshor

1620–1650 *Tea Break (at Foyer)*

1650–1730 **SESSION 15** (CHAIRPERSON: DR WAN TAT CHEE)

OR09 Development of Robust Digital Watermarking Framework for Compressed Video against Geometric Attacks
Presenter: Sadik Ali

IS02 Threat Modelling and Non Repudiation in Web Services Interactions
Presenter: Elvis Ling

Abstract Listing

Artificial Intelligence

Health Informatics

Information System Engineering

Natural Language Processing

Parallel Distributed Computing

Networking and Communication

Multimedia

Software Engineering

Other

Processing of Engineering Drawings for the Purpose of Segmentation

Hasan Al-Khaffaf, Abdullah Talib and Rosalina Abdul Salam
School of Computer Sciences
Universiti Sains Malaysia

ABSTRACT

In this article, two document analysis processes are being studied namely noise removal and arc/line segmentation. A noise removal algorithm that removes salt-and-pepper noise while retaining weak features (one-pixel-wide lines) is developed to clean graphic images. Short spurious limbs connected to graphical elements are also removed by the algorithm. An arc/line segmentation process that based on contour and skeleton is proposed. The aim is to recognize each ground truth object (whether circular arc or straight line) as a single element. We present partial results of the proposed noise removal algorithm. The arc/line segmentation process is still under development.

Poster

Integrating Crew Details Criterion for Team Oriented

Farizah Azmah Ridzuan and Ahamad Tajudin Khader
School of Computer Sciences
Universiti Sains Malaysia

ABSTRACT

In this paper, we were interested in looking more during the execution of Airline Crew Rostering. We focus on investigating the effects of integrating multi-dimensional input criterion of each crew in order to create a team. There are basically four (4) subsets of input criterion dimension, including; (i) objectives, (ii) rules, (iii) activities and (iv) crew details. For the sake of this conference, we only concentrate on crew details whereby it is expected to enhance the quality of the roster produced and fulfill crew's satisfaction. This will probably motivates crew to give better service to the passenger. Experimental data by using Genetic Algorithm (GA) approach show that it provide a better solution in relation to the above criteria chosen.

25th June
1400–1500
DK A

Automated Fish Recognition using Fourier Descriptors and Moment Invariant

Mohammad Nordin Mokti
School of Computer Sciences
Universiti Sains Malaysia

ABSTRACT

This paper presents an automated system on fish recognition. Images can be captured by marine biologist, diver or anyone in related area. Using the combination of region growing and edge detection, this process will segment the fish contour and then apply the combination of shape descriptor such as fourier descriptors and moment invariant using shape signatures like length-ratio, curve evolution technique and turn angle distance to extract the shape features of the fish. Classification is made based on these features

Poster

and feed-forward back-propagation neural network technique classifier will determine the species of the fish

Agent-Based Simulation of Pedestrian Movements in Masjid Al-Haram

Siamak Sarmady and Fazilah Haron
School of Computer Sciences
Universiti Sains Malaysia

25th June
1630–1730
DK C

ABSTRACT

A lot of work have been carried out on modeling and simulation of crowd. Basic movement models consider pedestrians similar to each other or with little differences. They also do not simulate behaviors of individual pedestrians. This increases the need of having specific software which is capable of simulating behaviors of the pilgrims. We suggest a basic model of human movement process which incorporates important social, physiological, psychological and environmental parameters together with it. The model will be able to simulate actions of individual pedestrians. A modular platform is also presented, which implements the proposed model. Early results of the Tawaf area simulation along with the used algorithm are reported at the end.

Identifying and Quantifying Rare Hypothesis in an Agent's Prediction

Davinna Jeremiah and Chan Huah Yong
School of Computer Sciences
Universiti Sains Malaysia

25th June
1400–1500
DK A

ABSTRACT

This paper we consider the idea of predicting agent nature in a multi-agent environment. In this environment, every agent belongs to a few types of behaviour or attitude and we defined this combination of behaviours as the agent's nature. The nature is influenced by the agents mental attitude and its nature also be reflected clearly in its communication with other agents. In this research we would like to study how an agent could actually predict another agent's behaviour through its communication with it and while predicting we also want to the agent to be able to identify whether there are any rare-behaving agents in existence. Rare-behaving agents are agents whose behaviours do not match with any of the category of behaviours that is usually found in the multi-agent environment. The predicting process is performed through a process of inference using the Bayes' theorem. To identify rare cases we have applied the surprise theory which shows the occurrence of surprise through the value calculated. We would like to extend this idea by allowing the agent to determine which model has caused the surprise and we want to also quantify the level of rareness from the point of view of the agent who is performing the prediction in a more concrete way.

Image Processing Approach to Brain Volume Calculation

Mahmoud Jawarneh, Mandava Rajeswari, Dhanesh Ramachandram and Zainul Ahmed Rajion
School of Computer Sciences
Universiti Sains Malaysia

ABSTRACT

The calculation of brain volume in CT image datasets is a necessary step to detect the normal brain from that one afflicted with craniosynostosis. We propose thresholding technique as a simple method to segment brain tissues as a pre-processing step to brain volume calculation. This method can be applicable in all dataset slices to get the brain tissue then calculating the brain volume related to the number of pixels in brain tissue.

25th June
1510–1610
DK A

Plan Nutritious Menu Using Genetic Algorithm

Maziah Salleh and Ahamad Tajudin Khader
School of Computer Sciences
Universiti Sains Malaysia

ABSTRACT

Planning nutritious menu is part of everyday life routine, not just for individuals but also in food service institutions. Several numbers of expert systems for nutrition have been developed lately. In menu planning problem, numerous constraints involve that need to be satisfied. This constraints can be categorizes into nutritional or nutrient constraints and personal constraints. A good menu must fulfill both constraints. A study found that manual menus made by dietitians may fail to satisfy all the nutrient constraints and requirements. In this paper, we introduce genetic algorithm (GA) method that will quickly generate various set of possible solution – nutritious and appealing enough menus. The method is proved capable to generate daily and weekly menus in shorten time.

25th June
1510–1610
DK A

A Multiplexor-based Framework For Generic Data Mining

Shailendra Singh and Cheah Yu-N
School of Computer Sciences
Universiti Sains Malaysia

ABSTRACT

In the real world application today there are many different data mining algorithms exist to address different needs and problem. The problem exist when there is more than one data mining algorithm exist to solve a particular problem in specific. One of the data mining algorithm maybe doing well with one set of data and another data mining algorithm might be giving good results with another data set. In short we can not find one generic algorithm to solve the entire problem in this world. The best approach which we need to achieve the best result but not the perfect result will be a multiplexor based on multiple different algorithms.

25th June
1510–1610
DK A

Using Ontology in Image Processing: Framework

Ahmad Abu Shareha, Mandava Rajeswari and Dhanesh Ramachandram
School of Computer Sciences
Universiti Sains Malaysia

25th June
1630–1730
DK A

ABSTRACT
With the growth of science and technology the ability of the computers to mimic humans is constantly being pushed beyond the limits and is breaking new grounds. To teach the computer to perceive and understand as humans do is being experimented by digitizing and representing knowledge in a way that machine may understand and reproduce. Semantic Web has introduced ontology, a formal way of knowledge representation which has influenced and has set new directions for the research in many disciplines. In this paper we discuss the use of Ontologies in the context of image processing, Image analysis and Computer vision.

A Software Tool for Underwater Video Enhancement

Kashif Iqbal and Rosalina Abdul Salam
School of Computer Sciences
Universiti Sains Malaysia

25th June
1630–1730
DK A

ABSTRACT
In underwater situations, clarity of images/video are degraded by light absorption and scattering. This causes one colour to dominate the image. In order to improve the perception of underwater images/video, we proposed an approach based on slide stretching. The objective of this approach is twofold. Firstly, the contrast stretching of RGB algorithm is applied to equalize the colour contrast. Secondly, the saturation and intensity stretching of HSI is used to increase the true colour and solve the problem of lighting. Interactive software tool has been developed for underwater image/video enhancement. In this paper, we also present results which are obtained using the software tool.

A Study on Integrating Genetic Level and Neuronal Level in Brain Modeling and Intelligent Machines

Muhammad Fermi Pasha and Rahmat Budiarto
School of Computer Sciences
Universiti Sains Malaysia

25th June
1630–1730
DK A

ABSTRACT
This paper discusses research work towards proposing a new framework of a brain-like model inspired by several known biological processes such as blood circulatory network, regulatory genomics, central nervous system, and lymphatic systems. The recent finding of life sciences research discovered that the evolution of human brain structure is greatly affected by its genome structure. Therefore, the new framework will try to accommodate this fact by having a simple gene regulatory network to control the structure of the neural network at the central nervous system. The new framework is also expected to solve common long existing problems in intelligent machines development, neural network in particular, of having a static structure, catastrophic forgetting,

adaptability, limited processor resources for processing complex structure, and learning ability by implementing mobile agent approach (act as lower motor neuron model) and spread in blood circulation network inspired environment. This research work is still at its earliest stage. Hence an intensive research is still carried out at the time of writing. This paper only reports the recent development and progress of the research work.

Analysis of Live Cell Images: A Framework

Muhammad Tariq Siddique and Rosalina Adul Salam
School of Computer Sciences
Universiti Sains Malaysia

ABSTRACT
This paper describes a framework for analyzing the color cell images using statistical models. Our proposed method applies segmentation and morphological filtering to color cell images. The relative color features are extracted and based upon features statistical models will be applied for recognition. Theoretically the framework is efficient and time saving for cell image recognition.

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1520–1620
DK A

Fish Recognition and Classification Using Statistical Approach

Humera Farooq and Rosalina Abdul Salam
School of Computer Sciences
Universiti Sains Malaysia

ABSTRACT
Usually manual systems are used to monitor the fish when it is migrating, which is time consuming, need human efforts (labor) and it is also damage fish in some situations. To solve this problem, some efficient approaches have been purposed. In this paper we purposed a framework following with 4 main steps for recognition and classification of fish according to species. The main purpose of this work is to show how the supervised learning classifier can increase the accuracy of recognition by minimizing the time factor.

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1520–1620
DK A

Image Segmentation Techniques for Fish Recognition

Ali Bin Samma and Rosalina Abdul Salam
School of Computer Sciences
Universiti Sains Malaysia

ABSTRACT
Automatic fish recognition and classification of the closed shape is needed, to work with suitable precision the system is able to separate between type's different objects from their images. However, the classification of fish from underwater images requires the use of intensive techniques for analyzing the image. Although enormous quantities of image data are now available for use by researchers, the analysis of this data requires the use of strong algorithms to detect the object and to extract its main features. This seriously limits the quantity of underwater data which can be treated as the treatment

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of such large quantities of data becomes manually impossible. Therefore an automated system which is able to extract the object at promptly is needed. This paper presents the use of machine learning and image analysis techniques for performing automated recognition and classification of fish from underwater images. Both the optimal threshold algorithm and novel method of image segmentation were compared

Enhancement of Learning Process for Robot Behaviors in Simulated Environment

Saeed Baneamoon and Rosalina Abdul Salam
School of Computer Sciences
Universiti Sains Malaysia

26th June
1650–1730
DK A

ABSTRACT

Training a robot to achieve its tasks directly in real world conduct appears to have many problems like: time consuming, high cost, high errors percentage and low efficiency and accuracy of the system. To avoid evolution of these problems, designing a simulated robot and training it in simulated environment should be started. The proposed system will investigate and improve the efficiency and accuracy of a simulated robot to choose correct behavior to perform its task. In this paper, we adopted improvement efficiency and accuracy of robot behaviors in simulated environment by using machine learning, which uses genetic algorithm. This type of machine learning is called genetic-based machine learning in which a distributed classifier system is used for designing a control system for simulated robot. Consequently, it helps the robot to achieve optimal action.

Arabic Number Recognition Using Neural Network

Saleh Al-Omari
School of Computer Sciences
Universiti Sains Malaysia

26th June
1650–1730
DK A

ABSTRACT

Automatic handwritten digit recognition is an extremely active research area, because of its important roll in automation and human-machine interaction. Conventional systems that deals with digits are no more useful, since the systems nowadays are computerized which enables the ease of communication between the user and computer. There are many applications in real life that uses numbers such as postal zip code, numbers in application forms, car plates, bank checks and another, from here the need for an optical character recognition system (OCR) to recognize these digits was urgent. This paper focuses on off-line isolated hand written Arabic digit recognition. We tried to present a system for dealing with such problem.

Solving the NP-hard Combinatorial Optimization Problem Using Ant Colony Optimization Metaheuristic and its Application

Jamaludin Sallim, Rosni Abdullah and Ahamad Tajudin Khader
School of Computer Sciences
Universiti Sains Malaysia

ABSTRACT

Ant Colony Optimization is a metaheuristic which inspired by the behaviour of real ant colonies and can be considered as one of recent approach that has been proposed. In this paper, we survey on ACO metaheuristic and its application for solving the NP-hard combinatorial optimization problem. The chosen NP-hard COP is Traveling Salesman Problem, which has attracted a very significant amount of research and has played a central role in ACO. We also comprise on the basic issues that play an important role for solving TSP that constructed by ACO.

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1520–1620
DK B

Implementation of the Proposed Translation Protocol between RSW Control Criteria and SIP Standards

Mahammed Eessa and Rahmat Budiarto
School of Computer Sciences
Universiti Sains Malaysia

ABSTRACT

There are currently more than one standard for signaling and control of internet telephone calls. Some of them are common use, namely (Session Initiation Protocol) SIP and (Real-time Switching) RSW. Both of protocols provide same functionality using different mechanisms. In this paper, we will present a prototype implementation of proposed translation protocol (R2SP) which translate between the RSW control criteria and SIP standards. The proposed translation was based on SIP v2.0 and the application of RSW in MCS Multimedia Conferencing System v4, while the implementation is based on SIP v2.0 and the application of RSW in MCS v6. This implementation will practically enable the communication translation between RSW control criteria and SIP standard.

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DK B

Discovering Novel Knowledge from Medical Documents: Leveraging Knowledge Acquisition for Structured and Unstructured Knowledge Sources in Automated Case Base Enrichment

Selvakumar Manickam and Cheah Yu-N
School of Computer Sciences
Universiti Sains Malaysia

ABSTRACT

Knowledge base building and construction involves an active interplay between domain experts – the source of problem-definitive cases – and knowledge engineers responsible for representing real-life cases into CBR-system compliant computational formats. In-

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1400–1500
DK B

deed, the problem-solving capability of any CBR system largely depends on the richness of its knowledge or case base (CB), notwithstanding the importance of CBR algorithms used to derive the 'analogy-based' solution, which should contain a large volume of up-to-date, solution-rich cases provided by an ensemble of acknowledged domain experts. Populating and subsequently maintaining a critical mass of decision-quality cases in a CB is a tedious manual activity demanding vast human and operational resources. In our work, we have managed to leverage upon 'information rich' medical documents, accessible over the Internet, to enhance the (medical) knowledge of traditional medical case-based reasoning systems. Most of these documents are stored in unstructured, free text(documents, records, audio transcriptions, etc.) format whilst others are stored in form of structured (database, XML, etc.) format. Extracting knowledge from unstructured sources employs more complex techniques such as text mining/analysis and information retrieval. In this way, we have presented a novel facet and utility of routinely collected medical documents, whereby they can be transformed from mere information resource to a diagnostic decision-support resource.

An Ontology and Constraint-based Approach for Dynamic Personalized Planning

Normadiah Mahiddin, Cheah Yu-N and Fazilah Haron
School of Computer Sciences
Universiti Sains Malaysia

25th June
1400–1500
DK B

ABSTRACT

Current plan representations are too fine grained and are not suited for all situations and domains. Furthermore, current planning systems are often static. Therefore, in this paper, we present a portable and intuitively easy plan representation that facilitates the storage and manipulation of generic plans and a constraint-based dynamic personalized planning. We also present an outline of its potential in Grid environment as enhancement in future work.

Approaches to Enhancing RosettaNet Standards Component

Tin Tin Ting, Vincent Khoo Kay Teong and Cheah Yu-N
School of Computer Sciences
Universiti Sains Malaysia

25th June
1400–1500
DK B

ABSTRACT

A major challenge in integrating trading partners' processes is effective documents interchange. Although the RosettaNet Partner Interface Processes have provided a standardized format for Business-to-Business (B2B) trade documents contents and processes, they suffer from diminishing data quality and overall service quality as a business grows in transaction volume. This paper describes a research roadmap for an eventual B2B Standards Component Model to be expressed in the Unified Modeling Language (UML). The proposed 'inside-out' approach would allow new paradigms, concepts and technologies to be modeled, iteratively analyzed and designed so that multiple-user standard practices could be more easily executed in the process of inter-

changing trade documents among the trading partners. Based on this Standards Component Model, it is hoped that a next generation service oriented framework/architecture could be implemented by RosettaNet to fulfill its objective of extending its user-base to include more organizations from the small and medium-sized industries.

Threat Modelling and Non Repudiation in Web Services Interactions

Elvis Ling
School of Computer Sciences
Universiti Sains Malaysia

ABSTRACT

A Web service is a set of programmable functions that could be invoked and consumed through Internet protocols such as HTTP, XML, SOAP, WSDL and UDDI. The design of Web services has been plagued with security flaws. Web services invocations could be executed on the fly with the invokers remain anonymous. Web services creators tend to overlook the need to securely identify the identity of the Web services consumers and the confidentiality and integrity of the interacted entities and processes among the Web services. This paper attempts to model the potential threats and vulnerabilities that plague the interactions among Web services. The model, based on the STRIDE threat model, is presented as a set of sequence diagrams that show the critical points where Web services interactions could pose a severe threat to both the Web services consumers and providers. At the end of this paper, the need for identifying the identities involved in a Web service interaction is highlighted through the recommendation of possible non-repudiation capabilities in Web services.

26th June
1650–1730
DK C

Automatic Speech Segmentation for Continuous Speech Recognition and Speech Labeling

Hong Kai Sze, Tang Enya Kong and Ranaivo-Malançon Bali
School of Computer Sciences
Universiti Sains Malaysia

ABSTRACT

Speech Segmentation has been an important subject for us to study. The main aim in speech segmentation is to split the continuous speech into segments of similar sounds so that they can be further analyzed. Thus speech segmentation often acts as the front-end of continuous speech recognition or speech to text. However, the continuous speech segmentation algorithms are still in its infancy stage and many limitations have been discovered in the literature. This paper will present the current trends in the field of speech segmentation, common features used in segmenting speech, overview of existing continuous speech segmentation system, development of speech analysis toolkits and the overview of our proposed continuous speech segmentation system.

Poster

Automated Rules Extraction using Hierarchical Divide Clustering (HDC)

Song Shen and Cheah Yu-N
School of Computer Sciences
Universiti Sains Malaysia

Poster

ABSTRACT

This paper presents an automated rules extraction method for guiding the matching process between the question and potential answers in the repository. Presently, HDC are proposed to assist clustering only question part in the automated rules extraction. Our Question Answering (QA) system methodology is presented as well, in which we aim to add tree matching as part of our multiple matching rules.

Integrating Syntax and Phonology in Hierarchical Structure in Speech Synthesis

Sabrina Tiun and Tang Enya Kong
School of Computer Sciences
Universiti Sains Malaysia

Poster

ABSTRACT

This paper presents a proposed linguistics tree structure representation which is a combination of syntax and phonology information. The syntactic tree structure is a dependency-based and every of its nodes are annotated with prosodic information. We did carried out an initial investigation to find out whether the tree representation is suitable to be used in speech synthesis framework and the result obtained was encouraging.

ELECTRE III in Virtual Organization Grid Policy Creative Agent Negotiation

Cheng Wai Khuen, Chan Huah Yong and Fazilah Haron
School of Computer Sciences
Universiti Sains Malaysia

25th June
1510–1610
DK B

ABSTRACT

This paper presents a multi-criteria analysis method, ELECTRE III, supports in choosing the best virtual organization (VO) grid policies for further negotiation. Autonomous software agents are used to perform negotiation between the VO keeper and sites. A sophisticated negotiation protocol, Creative Negotiation, is being chosen to solve the conflicts and bottleneck in counter-offer between parties. We have investigated and presented the capability of ELECTE III in grid policy selection, and also enhance the algorithm with higher adaptability and expandability due to the uniqueness of grid computing environment. Besides, we also experiments our overall concept in a multi-agent negotiation platform and simulated the VO registration scenario to illustrate our proposing approach.

Dynamic Image Allocation Algorithm

Aloysius Indrayanto and Chan Huah Yong
School of Computer Sciences
Universiti Sains Malaysia

ABSTRACT

Data allocation is one of the main concerns in Distributed Database System (DDS) design. Data allocation is the process of allocating (putting) a data fragment to one of the database servers. This paper proposes a new data allocation algorithm (more specifically for image files) which will take account the network topology, the capacity of the servers, the number of exact and similar image replicas already in the servers, the reliability of the servers and local interest/disinterest about certain types of images. Semi-cooperative game approach with fictitious play will be used. It should be possible to realize this algorithm in real world application; however, it still needs to be verified (and refined) using use cases and simulations.

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Deploying Distributed Database Management System in Grid Technology

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Universiti Sains Malaysia

ABSTRACT

Data is the most important resource to any information systems in an organization, the increasingly huge of data becomes an important issue to think where those data should be stored and how to be managed, one organization may can not alone handle such huge data. Many research works and projects produce some solutions to house and manage such huge data, and providing efficient, reliable, and secure data transfer to Grid users in a high level of quality. Most of those works are considering data files as type "flat files". Grid based systems are requiring a database access mechanism to provide seamless homogeneous access to the virtual distributed database systems. We aim at our work to get benefits from the power of DDBMS; our system deploys the DDBMS into Grid technology, it is implemented in Java using the OGSADAI- WSRF as a middleware, which based on web services to provide users with a friendly-interface. The distributed database which stored in different machines over a network are appearing as a one database to the user. Our system which deals with both homogenous and heterogeneous databases is considering data fragmentation and data replication, in order to achieve a high level of quality and system performance.

Poster

Simple Belief Revision for Jadex Agent

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Universiti Sains Malaysia

ABSTRACT

This paper presents the progress to date in an attempt to implement Simple Belief Re-

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vision for Jadex agent. Jadex is one of the agent architectures that is well-known and using mental attitudes in the design and realization of agents and multi-agent systems. It consists of the concepts of belief, desire and Intention (BDI) as mental attitudes. Currently, the belief manipulation in Jadex is able to provide simple operations for agents to reacts to changes of beliefs by adding or removing facts dynamically from belief or belief set, but there is no mechanism in Jadex to support belief revision. Therefore, this paper proposes a Simple Belief Revision model for Jadex agent in order to enhance the performance of Jadex agent from time to time.

Developing Mobile Phone Distributed Applications, Limitations and Considerations

Ali Kattan and Rosni Abdullah
School of Computer Sciences
Universiti Sains Malaysia

25th June
1630–1730
DK B

ABSTRACT
The recent advances in the mobile phone technology have enabled such device to be programmed to run general-purpose applications using the Java programming language. Such ability when coupled with the provision of high-speed mobile Internet access via UMTS, EDGE or WiFi would open the door for a new breed of mobile distributed applications. This paper explores the limitations of this technology as well as the consideration that must be perceived when designing and developing such applications.

Applying Mobile Agents on Mobile Grid Computing

Homam El-Taj and Chan Huah Yong
School of Computer Sciences
Universiti Sains Malaysia

25th June
1630–1730
DK B

ABSTRACT
This Paper will give a literature survey about mobile computing, the mobile grid computing, mobile agents and how to apply mobile agents on mobile grid computing and what has been done to solve the issues in these areas of study.

Comparison Study Among Routing Protocols (RIP, OSPF and BGP) of IPv4 vs IPv6 Environment

Wafaa Alsalihy and Sureswaran Ramadass
School of Computer Sciences
Universiti Sains Malaysia

25th June
1400–1500
DK C

ABSTRACT
The success of the Internet has substantially grown these last years. The protocols and the technology that make it works were developed in the 1970s and 1980s, but the number of users has effectively known a dramatic rise in the 1990s. Today, the main problem is a lack of IPv4 addresses for all users. Since 1993, the Internet Engineering Task Force (IETF) started to develop the successor of IPv4 to resolve this problem, which is called

IP next generation (IPng) or IPv6. When IPv6 proposed many mechanisms proposed after for smooth transition. But routing protocols such as RIP, OSPF and BGB needed a change to cop with this new technology. In this paper, we will study the difference between IPv4 and IPv6 in the most used routing protocols in networks. Firstly, we are going to describe the major modification in the address in IPv4 and IPv6. Then, we will explain the differences in the two versions in a static configuration of routers. Finally, we will compare the most employed dynamic routing protocols. This last part affect to Interior Gateway Protocols: RIP and OSPF; and an External Gateway Protocol: BGP.

Overhead Minimization in Nested NEMO

Monther Enayah and Azman Samsudin
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Universiti Sains Malaysia

ABSTRACT

The Network Mobility (NEMO) protocol is an extension from mobile IPv6, which enables mobile networks to transport their point of attachment to the Internet, while maintaining established sessions of the nodes within the mobile network. This paper discusses the overhead occurred after establishing the security technique proposed previously in [1] to solve the threats in the nested mobile network, which incurred routing loops and insecure Dynamic Home Agent Address Discovery (DHAAD).

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DK C

Handling Transmission Error for IPv6 Packets over Fiber Optic Links

Supriyanto
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ABSTRACT

Address space in IPv6 very large to accommodate the human requirement of IP addresses. It may not be needed MAC address so one of the functions of data link layer that is framing can be reducing. If the framing can be reduced, it may reduce the other data link layer function that are error control and flow control. In order to handle the two, we need a new mechanism especially to handle error control. This research will define that new mechanism by create a simulation with network simulator software. However, there are some error controls in TCP/IP stack such as in application layer and transport layer. We will focus in only data link layer. By reducing the data link trailer that contains error check can increase space of data and make faster transmission of the packet. The new mechanism may or may not put the error check in other layer such as network layer.

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DK C

Defending Servers against Naptha Attack

Han Pin Cheng and Sureswaran Ramadass
School of Computer Sciences
Universiti Sains Malaysia

25th June
1510–1610
DK C

ABSTRACT

A concurrent server typically creates one process or one thread for each established connection. Once the maximum process limit or thread limit is reached, new request will be closed and dropped. Naptha attack aims to fill up this limit by generating large amount of spurious connections to the server that do nothing but to consume the available process slots. Since the attack traffics and legitimate traffics look alike, they are difficult to be differentiated and isolated in particular. We propose an approach in defending servers against this attack, named Early Client Authentication Method. This method patches the gap between connection establishment and client validation which appears in current server-client application. The advantage of the proposed Early Client Authentication Method is that it does not introduce additional transactions between client and server while still capable to identify and drop only the attack traffics. It is expected that this method is capable in handling thousands of connections forged using Naptha attack while continue serving its clients.

An Application Layer Fragmentation and Reassembly Algorithm for Video Conferencing to Override Firewall Rules

Usman Sarwar, Sureswaran Ramadass and Iznan Husainy Hasbullah
School of Computer Sciences
Universiti Sains Malaysia

Poster

ABSTRACT

In this research, we address the problem with video transmission fragmentation over the lossy network due to network layer and the configuration of network entities which affect the transmission. To elude IP fragmentation for video conferencing, we implemented an application layer fragmentation and reassembly algorithm. This algorithm also resolves the fragmented packet drop by the firewalls. In this paper, we focused on test conducted using our algorithm in video conferencing to elude firewall configuration which affects the transmission.

Linguistic Steganography: A Potential of Malay Language Steganography

Roshidi Din and Azman Samsudin
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Universiti Sains Malaysia

25th June
1510–1610
DK C

ABSTRACT

Steganography, a part of information hiding is an art of hiding information into another medium of information (text, audio, video, image, etc.) with the main purpose is securing information during communication. With the purpose of opening an opportunity to

create a communication channel that is covert and subliminal between two parties where by the existence of the particular message being sent and received are kept unknown or innocuous to any possible attacker. Steganography can be divided into two that is technical steganography and linguistic steganography. Therefore, the main objective of this paper is to see whether Malay language is compatible to be implemented as linguistic steganography. The comparison study is done based on linguistic aspects (syntactic and semantic) of several foreign languages that have been developed into machine translation system. Chinese, Japanese, and Malay will be compared, in which the characteristic of Malay language will be highlighted in this paper. Finally, this paper will show several characteristic of Malay language that could be used in linguistic steganography.

Network Address Translation (NAT) From Termianal Client to Termianal Client

Hala Ibrahim and Rahmat Budiarto
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Universiti Sains Malaysia

ABSTRACT

NAT it is abbreviation of Network Address Translator, NAT involves re-write the source and /or the destination of IP address packets as they passing through the router or firewall. Usually the data passing from terminal to another through the server and / or router and this process consume a lot of time that we could save it by passing the data from to the other directly without passing through the server or router by using the gapes that exist when terminals make a recall.

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DK C

Wireless Sensor Networks: An Introduction

Ala' Abdullah and Wan Tat Chee
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Universiti Sains Malaysia

ABSTRACT

Wireless sensor network is a wireless network consisting of distributed sensor nodes to monitor some physical conditions or events; it was invented for military purposes, but nowadays it has many civilians application. The main role of this network is information gathering, this information to be transfer to a sink in terms to help in decision making. This paper presents an overview of this network.

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DK A

UML-based Hypermedia Design Method: A Review on Design Processes and Modeling Elements

Azrul Hazri Jantan, Putra Sumari and Shahida Sulaiman
School of Computer Sciences
Universiti Sains Malaysia

ABSTRACT

Hypermedia application is a complex multimedia-based application that has been used

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in many fields for expressing information to the users. The process of designing and developing this application are different if compare to the traditional information system practices; thus, it has become one of the big issues in hypermedia engineering industry. Designing hypermedia application demands a number of extra efforts, such as to support a complex structure of navigation, high quality presentation of user interfaces, and to presents more varied forms of information to the users. The increasing complexity of this application raised the need to employ many designing methods in hypermedia development practice. The main objective of this paper is to review the core hypermedia design processes that are based on Unified Modeling Language (UML). Based on a hypermedia design method called UML-based Web Engineering (UWE), we are focusing in this paper to describe a number of modeling elements used for each process reviewed. Some arguments and future refinements for UWE will be discussed and summarized at the end of the paper.

A Representation Structure of E-Book Builder for Personalising E-Book Specification

Noorul Hameed, Cheah Yu-N and Muhammad Rafie
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Universiti Sains Malaysia

Poster

ABSTRACT

Electronic Book (E-Book) Builder is called as an authoring program for the purpose of creating e-book that represents traditional book structures. Present E-Book Builders are not embedded of well-informed features about characteristics of Multimedia. Moreover they found of little importance or significance on Web Program. This research articulates the prevalent limitations with advancements of Layouts. The process of Personalization of Layouts for e-book referred as XEB-PER abbreviated by eXtensible E-Book Personalization (XEB-PER). XEB-PER exemplified by following nine important Fields such as Format, Library, Taxonomy, Metaphor, Personalization, Window, Parser, Viewer, and Operation. Format determines arrangements of data on structure. Library organized with seven types of objects as structural elements are of Package, Visual, and Metaphor objects where as functional elements are of Media, Content control, Device control and Book update. Taxonomy defines organization of characteristics or expressions on e-book. Metaphor sorts instructions with learning activities by learner. Personalization embodies Content styles with multi-purpose attributes. Window exhibits Visual cues for displaying layouts. Parser is of compilation about verification on structure. Viewer explores structured information rendering over the Surface and Operations execute an e-book procedure. The main focus of Our Builder is of Format as Events related by activities of instructions and Internet.

Mobile Video-on-Demand in Wireless Ad-hoc Networks

Amir Rizaan Abdul Rahiman and Putra Sumari
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ABSTRACT

Video broadcasting plays an important rule for disseminating packet data in mobile Video-on-Demand (VoD) systems. The implementation VoD system in wireless ad-hoc network create some challenges such as bandwidth limitation, unfixed network topology, signal strength etc. This paper discusses the issues in designing a mobile Video-on-Demand (VoD) system for wireless ad-hoc network environment. The designing issues include the broadcasting protocol, the architecture for VoD system, and constrains of wireless ad-hoc network. The architectural consider the limitation of wireless network to ensure the effectiveness of the VoD system.

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Multi-modal Fusion for Video Analysis: An Overview

Alfian Abdul Halin, Mandava Rajeswari and Dhanesh Ramachandram
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Universiti Sains Malaysia

ABSTRACT

This paper is an overview of two research work relating to multi-modal analysis aided by domain knowledge for the purpose of event detection in video. The first makes use of visual and semantic-textual modalities, whereas the second fuses visual, audio and facial features via statistical techniques. Both works are among the many that attempt to bridge the semantic gap between low-level features and the high-level concepts that describe them

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A New Approach to 3D Morphing

Shamima Yasmin and Abdullah Zawawi
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ABSTRACT

3-D morphing, in its simplest definition, is shape transformation between a pair of objects i,e, source and target, by gradual, continuous and simultaneous dissolvement of the shape of source object to its target and vice versa resulting in a number of intermediate shapes. Till now many algorithms have been developed for this purpose each one having its own speciality. In this paper, in addition to a brief review of the existing morphing algorithms, a novel algorithm has been designed. The concept of slices originates from reducing a 3-D object to a number of slices in 2D plane. All of these 2D planes may not be oriented in either x, y, z or in a particular direction. Orientation and rotation of the slices within a single body can be varied from one slice to another. The proposed advantages i.e. flexibility, dynamism and ease of implementing of this new approach over other 3D morphing algorithms have also been discussed.

Poster

GUI layout design for a better interface to improve software understanding

Rozita Kadar and Shahida Sulaiman
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25th June
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DK B

ABSTRACT

Human mind is strongly visually oriented. Representing programs in graphical images offer many advantages for improving software understanding technique. One way to improve software understanding is to comprehend the users via IDE(Integrated Development Environment). A number of IDEs software packages available are not user friendly and become more difficult to use. Some IDEs are designed to professional users with advance features and work well in advanced courses but they are not very suitable for novice users. These features may overwhelm some of users especially those who have computer background. Some IDEs are very simple and fail to expose students to the real world environment. IDE also provides a Graphical User Interface (GUI) builder. A GUI is a particular case of user interface for interacting with a computer which employs graphical images and widgets in addition to text to represent the information and actions available to the user. This paper identifies the weaknesses and strengths of GUI layout. The main goal of this work is to improve visual presentation method in a GUI, to upgrade the effectiveness in developing GUI, and to help users to improve their software understanding in software development and maintenance.

Evaluating The Location of Middle East and East Africa Ports Using Data Envelopment Analysis (DEA)

Ahmed Salem Al-Eraqi, Ahamad Tajudin Khader and Adli Mustaffa
School of Computer Sciences
Universiti Sains Malaysia

25th June
1630–1730
DK C

ABSTRACT

In this paper the efficiency and performance is evaluated of 22 ports in the region of East Africa, Red Sea, Arabian Sea and the Gulf Sea. The aim of our study is to compare ports situated on the maritime trade road between the East and the West. These are considered as middle-distance ports at which goods from Europe and Far East/Australia can be exchanged and transshipped to all countries in the Middle East and East Africa. All these ports are regional coasters, and dhow trade was built on these locations, leading this part of the world to become an important trade center. Data was collected data for 6 years (2000-2005) and a non parametric linear programming method called DEA (Data Envelopment Analysis) is applied. The ultimate goal of our study is: 1) to estimate the performance levels of the ports under consideration. This will help in proposing solutions for better performance and developing future plans. 2) To select optimum transshipment location/s.

Multi-Relational Data Mining – A Survey

Mohammad Reza Zare Mirakabad and Aman Jantan
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Universiti Sains Malaysia

ABSTRACT

Poster

Data mining algorithms look for useful patterns in data. Many of existing data mining approaches work on data in attribute-value format, i.e. they assume all data exists in one single table. On the other hand most of real application systems exploit from relational databases and store their structured data in multiple tables. To employ data mining techniques on multiple tables, one approach is summarizing and squeezing data in one table and using conventional techniques so-called propositionalization. This causes loss of data and meaning and statistical skewing. Another method is propagating the ID of target table to related tables and applying existing methods and combining results. This method has some previous drawbacks as well. Another approach is extending conventional algorithms and upgrading them to applicable for multiple tables. This upgrading includes key notions of any technique, constraints and whole algorithm. Increasing the number of relations and attributes and complexity of extended algorithms are limitation of this method. In this survey we compare these three different approaches for employing data mining techniques on multiple tables and express their limitations and drawbacks in aim of introducing scalable, efficient and accurate multi-relational methods.

NEMO Security Management with CA-PKI and Random Number

Tat Kin Tan and Azman Samsudin
School of Computer Sciences
Universiti Sains Malaysia

ABSTRACT

Poster

Network Mobility (NEMO) has gained much momentum ever since being introduced. The concept of NEMO, is actually building on top of the MIPv6 and using MIPv6 as its backbone. The differences are much aligned at the capability of the Router being able to roam freely, hence the term Mobile Router (MR). Whereas in the MIPv6 world, there is only fix Access Router (AR) that played routing roles. Since the NEMO is directly associated with MIPv6 as the backbones building blocks, the NEMO concepts has also inherits the security management systems of which MIPv6 is adapting. As the matter of fact, the NEMO concept has exposed a greater security risks with the use of IPSec as the security design and in particular relying on the underlining Authentication Header mode with IPSec. Coupled with nested looping concept and capability that NEMO offered, the use of IPSec as the security design will no longer be sufficient from the efficiency point of view. And as for authentication, the protocol firstly introduced in NEMO did generate both processing and protocol overheads. In this paper, we will illustrate the use of IPSec on NEMO, and zooming into the instances whereby nested looping comes into picture and how security system will be at risk. We will also describe the works on finding faster and simpler authentication system to NEMO. And finally this paper will propose propose a new security design system to counter the inefficiencies.

Fractal Public-Key Encryption Protocol

Mohammad Ahamad and Azman Samsudin
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Universiti Sains Malaysia

Poster

ABSTRACT

In this paper, we are proposing a new cryptographic public-key encryption protocol based on Mandelbrot and Julia fractal sets. The fractal based public-key encryption protocol is possible because of the strong connection between the Mandelbrot and Julia fractal sets. In the proposed protocol, Mandelbrot fractal function takes the chosen private key as the input parameter and generates the corresponding public-key. Julia fractal function is used to cipher the plaintext with receiver's public key and decipher the ciphertext based on the receiver's private key. The proposed protocol is designed to be resistant against attacks, utilize small key size and perform comparatively faster than the existing RSA public-key encryption protocol. The proposed fractal public-key encryption protocol is, therefore, an attractive alternative to the traditional number theory based public-key encryption protocol.

Neuro-Fuzzy and Intrusion Detection: A Survey

Mahmoud Jazzar and Aman Jantan
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25th June
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DK C

ABSTRACT

The complex nature of the IDS based technologies have made Intrusion Detection Systems (IDSs) become an indispensable defense and important area of research in computer science. In recent years, the dramatic threat of network-based attacks and the security concerns have received sorcerous attention from different organizations for deploying more sophisticated IDS as first line of defense. However, there is a wide variety of techniques used in intrusion detection research like Neural Networks and Fuzzy Logic which show impressing results and abilities yet to discover in the field. The aim of this paper is to provide current issues and trends on studies on IDS technologies. Emphasis on IDSs based on Neural Networks and Fuzzy logic (Neuro-Fuzzy) to proceeds to provide an overview and challenges to overcome in the taste of Neural Nets (NNs) and Fuzzy Logic. A survey and recommendation on recent Neuro-Fuzzy IDSs is also provided.

Policy Management System for Virtual Organization

Anas Hussain
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Universiti Sains Malaysia

Poster

ABSTRACT

With the diversity and complexity of the components involved in VO and security concerns, such as unauthorized access, unfair resource usage, and QoS violations, we must develop a comprehensive set of mechanisms and policies for securing the virtual organi-

zation environments. To achieve this goal we propose to use policy management in VO environment. We address the issues of developing policy management in VO and provide policy management system framework that intended to employ policy management in VO environment and support such polices. This framework provides infrastructure for creating and enforcing polices. This paper aims to describe the policy management system we have elaborated for VO.

A Review of Automatic Image Annotation and its Applications

Noridayu Manshor, Mandava Rajeswari and Dhanesh Ramachandram
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Universiti Sains Malaysia

ABSTRACT

An automatic image annotation has received broad attention from researchers in the field of computer vision that resembles human capability in perceiving and understanding an image. This automatic image annotation has the ability to make decision according to the visual content that contained in the image itself. There are many methods that have been proposed in the literature to find the best approach for finding most appropriate keywords for unlabelled images and to reduce the irrelevant keywords. In the meantime, automatic image annotation helps to reduce semantic gap between low level visual features and higher level semantic of images which is closer to human understanding. In this paper, we will present an overview of image annotation approaches and review several methods that had been used by various authors.

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Data Semantic Approach for Deciding Job Scheduling in Grid System

Asef Al-Khateeb and Chan Huah Yong
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Universiti Sains Malaysia

ABSTRACT

Grid computing is an emergent technology that coordinate resource sharing among Virtual Organization VO, Job scheduling is one of the major tasks in Grid systems, Meta-Scheduling is one of the important type of job scheduling, few of previous works have been done, most of them are considering some of criteria, namely: network cost, host site capabilities and data transfer cost. There is a lack of works in Meta-Scheduling; furthermore, there are some other criteria play roles in scheduling decision such as: reliability, and number of processors in the site. We propose a new system which consider all above criteria for deciding the best site for submission jobs, and number of jobs for each batch depending on the host site capabilities. We will implement our system as a web service compatible with OGSA in JAVA, and will be evaluated using GridSim tool.

Poster

Development of Robust Digital Watermarking Framework for Compressed Video against Geometric Attacks

Sadik Ali and Putra Sumari
School of Computer Sciences
Universiti Sains Malaysia

26th June
1650–1730
DK C

ABSTRACT

One of the significant problems in video compression schemes is the Geometric distortion, so we will use the transform domain (DCT domain)for develop an algorithm to place invisible watermark in a video. This algorithm will be robust against geometric distortion such as (scaling ,frame dropping, and cropping). In our Proposed we will embed watermarking in I-frame, or P-frame, and B-frame. we will use one GOP and the same slice in I-frame, P-frame, and B-frame for embed watermark bits after encoded its (select only Y (Luminance)) and for more security we will use Hopping method to select randomly blocks and embed watermark data. To avoid the level security this technique is suggested. In this technique, the next bits will be hidden in independent block. Thus high level of security can be obtained i.e. even any bit(s) in the watermark data may be reached, the position of next bit(s) cannot be found. On the other hand, using this technique can be hide little amount of data. This technique can be used with small watermark data efficient.

Vector Space Model for Protein Data Retrieval

Mohammed Said Abual-Rub
School of Computer Sciences
Universiti Sains Malaysia

Poster

ABSTRACT

This research provides a new method of information retrieval which is a modification of Vector Space Model for information retrieval, this new model is modified to be applied on protein sequence data whereas the normal vector space model has been applied on text data and has not been applied on protein data sequences. The results show that the new model achieved very good results in performance but the setup time is somehow high for a large collection of documents. This research also discusses the different methods of information retrieval and that is by making comparison among them and focusing on the most famous methods which are: Natural Language Processing model, Knowledge-based approaches, Data Fusion, Probabilistic Model and Vector Space Model. The study provides a definition of each method, the way it works, its advantages, and drawbacks. The result of the survey shows that VSM seems to be the best model for protein sequence.

Parallel Geometric Hashing Algorithm

Khalid Jaber
School of Computer Sciences
Universiti Sains Malaysia

ABSTRACT

Poster

The protein structure became very huge nowadays, which lead to the need of improving algorithms to cope with this exponential increase. At the same time, processors became not only more powerful but also affordable with low price. By making use of these advantages we can construct a powerful parallel system that will overcomes the problem of exponential increase of data. This research project presents parallel geometric hashing algorithms which will lead to powerful, accurate and fast results especially in search and matching. This parallelized algorithm performs coordinate transformations on the feature points of an object to obtain an abstract model of that object. The matching objects are identified by computing correlations between the feature of the query and the model. Our system was run on stealth cluster and it used single instruction multiple data (SIMD) paradigm and it was applied on protein structure data. The system allows rapid recognition of unknown protein structure which consists of many residues. With 50 proteins we achieved execution time of about 1.111529 seconds on five nodes, compared to 7.937 seconds for the sequential execution time.

A New Method in Video Steganography with Improves Video Quality

Attalah Mahmoud Al-Shatnawin
School of Computer Sciences
Universiti Sains Malaysia

ABSTRACT

Poster

The presence of spies and aliens at the level of companies, organizations or at state level had brought up the need to find different ways to conceal messages by using different techniques such as wax wood-based panels, secret link, media file and others, these techniques had developed hiding information to be more secure and safe. This research project shows Steganography techniques used in the past and present starting with messenger's bodies and end now by using media file especially video file. At the beginning of the project Steganography is clarified and explained in terms of its requirements and how it's being used. Literature review also explains and clarifies Steganography techniques and how to can hide secret message inside each of them, then this project was focused on LSB method that using in image or video files also DCT was explained, the results shown identify the advantages and the disadvantages of a new technique to develop LSB method. The suggested method clarifies and explains the LSB weaknesses and the optimal way to process these weaknesses. Also the new method suggested implemented and applied in the example and the result of this method analyzed and discussed, also the small comparison betweem the tow methods done to explain the role each of them.

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Dr Azman Samsudin
Mr G.C. Sodhy
Dr Shahida Sulaiman
Dr Putra Sumari
Dr Yap Fa Toh
Dr Cheah Yu-N
Ms Zurinahni Zainol