



# CONFERENCE PROGRAMME

The 7<sup>th</sup> KES International Conference on Agent and Multi-agent Systems – Technologies and Applications



Hue City, Vietnam  
27-29 May 2013

Organised by:



HUE UNIVERSITY

# Preface

This volume contains the proceedings of the 7<sup>th</sup> KES International Conference on Agent and Multi-Agent Systems – Technologies and Applications (KES-AMSTA 2013) held on May 27–29, 2013 in Hue city, Vietnam. The conference was organized by KES International and its Focus Group on Agent and Multi-agent Systems, and Hue University, Vietnam.

Following the success of previous KES Symposia/Conferences on Agent and Multi-Agent Systems – Technologies and Applications, held in Wroclaw, Poland (KES-AMSTA 2007), Incheon, Korea (KES-AMSTA 2008), Uppsala, Sweden (KES-AMSTA 2009), Gdynia, Poland (KES-AMSTA 2010), Manchester, UK (KES-AMSTA 2011), and Dubrovnik, Croatia (KES-AMSTA 2012), this conference continues to provide an internationally respected forum for scientific research in the technologies and applications of agent and multi-agent systems.

The field of agent and multi-agent systems is concerned with the development and evaluation of sophisticated, AI-based problem-solving and control architectures for both single-agent and multi-agent systems. Current topics of research in the field include, among other, agent-oriented software engineering, beliefs engineering, desires and intentions representation, agent co-operation, co-ordination, negotiation, organization and communication, distributed problem solving, specification of agent communication languages, formalization of ontologies and conversational agents. Special attention is paid to the feature topics: Intelligent technologies and applications in the area of e-health, social networking, self-organizing systems, economics and trust management.

KES-AMSTA 2013 features a number of keynote talks, oral presentations, and invited sessions, closely aligned to the theme of the conference. The conference attracted a substantial number of researchers and practitioners from all over the world who submitted their papers for the main track covering the methodology and applications of agent and multi-agent systems, two special sessions on specific topics within the field, and a half day workshop for early career stage researchers.

The main track streams, covering the methodology and applications of agents and multi-agent systems, includes sessions on: Multi-Agent Systems Design and Implementation, Agent-Based Modeling and Simulation, Coordination, Cooperation and Teamwork, Agent-Based Optimization, Web Services and Semantic Web, Agent Theories, Models and Communication, and Social and Business Issues.

In addition to the main tracks of the conference two invited sessions are hosted: Intelligent Agents with Semantic Technology (IAST 2013), and Computational Intelligence for Business Collaboration (CIBC 2013). On the final day of the conference the workshop entitled New Directions in Agents Research is held.

Submissions to KES-AMSTA 2013 came from 20 countries. Each paper was peer reviewed by at least two members of the International Programme Committee and International

Reviewer Board. In all, 44 best papers were selected for oral presentation and publication in the proceedings volume of KES-AMSTA 2013.

The papers presented during the conference highlight new trends and challenges in agent and multi-agent research. We hope that these results will be of value to the research community working in the fields of artificial intelligence, collective computational intelligence, robotics, dialogue systems and, in particular, agent and multi-agent systems, technologies and applications.

We would like to express our sincere thanks to the KES-AMSTA 2013 General Chair and KES-AMSTA Symposium Series and Focus Group on Agent and Multi-agent Systems Chair, Ngoc Thanh Nguyen from Wroclaw University of Technology, Poland. Since the first KES-AMSTA conference in 2007, each year his work and involvement in the organization of KES-AMSTA series conferences has contributed to ensure high quality of these events.

We are very grateful to the keynote speakers, Andrzej Szalas, University of Warsaw, Poland, and Arkady Zaslavsky, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia, for their interesting and informative talks of the world-class standard.

Our thanks are due to all International Programme Committee members for their valuable efforts in the review process, which helped us to guarantee the highest quality of selected papers for the conference. Thanks are also due to several additional reviewers, who contributed to the conference success. Our special gratitude is also directed to the Invited Session Chair, Linh Anh Nguyen, and organizers and chairs of invited sessions, Trong Hai Duong, Jason J. Jung, and Hanh H. Hoang, for their valuable contribution.

We extend our thanks to main organizers and sponsors, KES International and Hue University, Vietnam. Our special thanks go to the Organizing Chair, Hanh H. Hoang, and all members of Local Organizing Committee for their excellent efforts in the organizational work.

Finally, we cordially thank all the authors for their valuable contributions and the other participants in this conference. The conference would not have been possible without their support.

March 2013

Ngoc-Thanh Nguyen  
Manh Thanh Le  
Dariusz Barbucha  
Robert J. Howlett  
Lakhmi C. Jain

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## Keynote Speakers



**Prof Andrzej Szalas**

University of Warsaw, Poland

**Title: Partiality and Inconsistency in Agents' Belief Bases**



**Prof Arkady Zaslavsky**

Commonwealth Scientific and Industrial Research Organisation  
(CSIRO), Australia

**Title: Internet of Things, ubiquitous sensing and sensing agents**

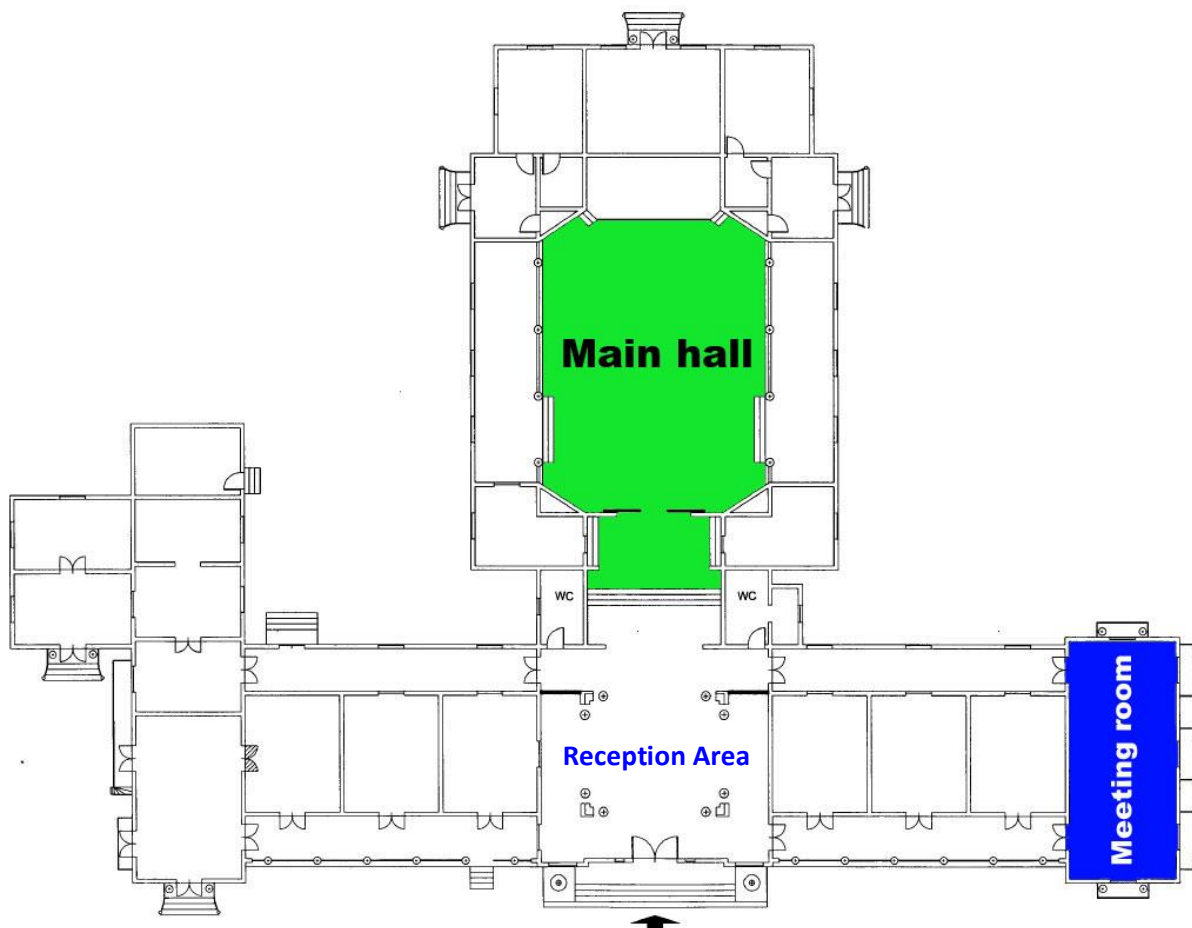
**Conference Venue:****Hue University Headquarter****Address:**

Hue University  
03 Le Loi Street  
Hue City  
Vietnam

**Website:** <http://www.hueuni.edu.vn>

**Conference rooms:**

- **Main hall** (ground floor), plenary and parallel sessions (S1, 3, 5, 7, 9)
- **Meeting room** (ground floor), parallel sessions (S2, 4, 6, 8, 10, 11)

**Weather:**

- Humid and Hot weather: ~35°C



## CONFERENCE PROGRAM

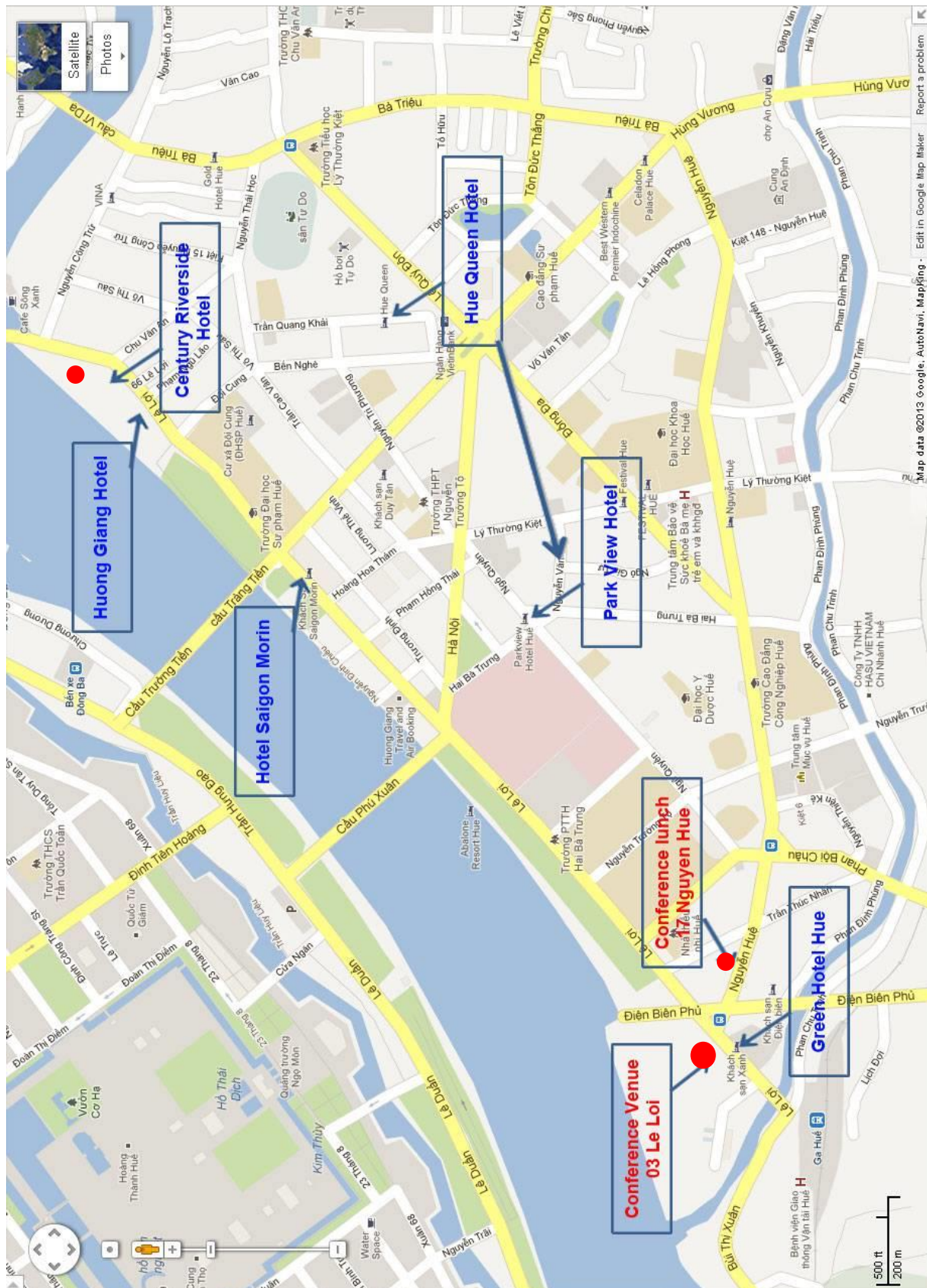
Monday, 27/5/2013		
08:00 - 09:00	Registration	
09:00 - 09:30	Opening ceremony	
09:30 - 10:30	<b>P1: Plenary session</b> <b><i>Internet of Things, Ubiquitous Sensing and Sensing Agents</i></b> Arkady Zaslavsky Chair: Dariusz Barbucha	
10:30 - 11:00	Coffee break	
11:00 - 12:30	<b>S1: Coordination, Cooperation and Teamwork</b> Chair: Frantisek Capkovic  <b>Obligation and Prohibition Norms Mining Algorithm for Normative Multi-agent Systems</b> <i>Moamin A Mahmoud, Mohd Sharifuddin Ahmad, Azhana Ahmad, Mohd Zaliman M. Yusoff, Aida Mustapha, Nurzeatul Hamimah Abdul Hamid</i>  <b>Role and Member Selection in Team Formation Using Resource Estimation</b> <i>Masashi Hayano, Dai Hamano, Toshiharu Sugawara</i>  <b>Incorporating Explicit Coordination Mechanisms by Agents to Obtain Green Waves</b> <i>Antonio De Abreu Batista Junior, Luciano Reis Coutinho</i>  <b>Communication Leading to Coalition Nash Equilibrium I</b> <i>Takashi Matsuhisa</i>	<b>S2: Social and Business Issues</b> Chair: Bay Vo  <b>The Agent-Based Diffusion Model on a Combined Social Network</b> <i>Setsuya Kurahashi</i>  <b>The Supply Chain in Cloud Computing – the Natural Future</b> <i>Katarzyna Grzybowska, Gabor Kovacs, Balazs Lenart</i>  <b>Incentive Contracts in Logistics Outsourcing</b> <i>Qin Zhu, Richard Y.K. Fung</i>  <b>A Multi-Agent System for Games Trading on B2B Market Based on Users' Skills and Preferences</b> <i>Pavle Skocir, Gordan Jezic</i>
12:30 - 13:30	Lunch	
13:30 - 15:30	<b>S3: Agent-Based Modeling and Simulation</b> Chair: Gordan Jezic  <b>Modeling Value Co-creation Process in Complex Service Systems Using Kauffman's NKCS Architecture</b> <i>Chathura Rajapakse, Takao Terano</i>  <b>Agent-Based Simulator for Travelers Multimodal Mobility</b> <i>Mahdi Zargayouna, Besma Zeddini, Gerard Scemama, Amine Othman</i>  <b>Multi-Level Agent-Based Modeling: a Generic Approach and an Implementation</b> <i>Duc-An Vo, Alexis Drogoul, JeanODaniel Zucker</i>	<b>S4: Invited Session on Computational Intelligence for Business Collaboration (CIBC 2013)</b> Chair: Hanh Huu Hoang  <b>Relationships Among the Concepts of Reduct in Incomplete Decision Tables</b> <i>Nguyen Long Giang, Vu Van Dinh</i>  <b>Exploiting Linked Open Data for Attribute Selection on Recommendation Systems</b> <i>Xuan Hau Pham, Jason J. Jung, Hideaki Takeda</i>  <b>Semantic Service Matchmaking for Ad Hoc Supply Chain Formation: a Network Analysis Approach</b> <i>Duc Nguyen Trung, Jason J. Jung</i>

	<b>Optimizing an Environmental Surveillance Network with Gaussian Process Entropy – An Optimization Approach by Agent-based Simulation</b> <i>Viet Xuan Truong, Hiep Xuan Huynh, Minh Ngoc Le, Alexis Drogoul</i>	<b>A Combination of Business Rule and Modeling Languages for Semantic Business Processes Modeling</b> <i>Chi P. T. Tran, Hanh Huu Hoang</i>
	<b>Towards the Validation of Agent-based BPM Simulation</b> <i>Roman Sperka, Dominik Vymetal, Marek Spisak</i>	<b>An Ontological Approach for Collaborative Business Processes formulation with Consensus Methodology</b> <i>Trung Van Nguyen, Minh T.N. Hoang, Hanh Huu Hoang</i>
15:30 - 16:00	Coffee break	
16:00 - 17:00	<b>S5: Agent-Based Optimization</b> <b>Chair: Setsuya Kurahashi</b>	<b>S6: Web Services and Semantic Web</b> <b>Chair: Jaegeol Yim</b>
	<b>An Agent-Based Cooperative Population Learning Algorithm for Vehicle Routing Problem with Time Windows</b> <i>Dariusz Barbucha</i>	<b>A Technical Survey for Linked Open Data Federation Building</b> <i>Cuong Duc Nguyen, Trong Hai Duong</i>
	<b>Mobile Agent-based Dynamic Resource Allocation Method for Query Optimization in Data Grid Systems</b> <i>Igor Epimakhov, Abdelkader Hameurlain, Franck Morvan, Shaoyi Yin</i>	<b>Software Bug Ontology Supporting Bug Search on Peer-to-Peer Networks</b> <i>Ha Manh Tran, Son Thanh Le, Synh Viet Uyen Ha, Tu Kha Huynh</i>
	<b>Memetic Multi-Agent Computing in Difficult Continuous Optimisation</b> <i>Aleksander Byrski, Wojciech Korczyński, Marek KisielDorohinicki</i>	
19:00 - 21:00	Welcome Reception (Main hall)	

Tuesday, 28/5/2013		
08:00 - 09:00	Registration	
09:00 - 10:00	<b>P2: Plenary session</b> <b>Partiality and Inconsistency in Agents' Belief Bases</b> <i>Andrzej Szalas</i> Chair: Hanh Huu Hoang	
10:00 - 10:30	Coffee break	
10:30 - 12:30	<b>S7: Agent Theories, Models and Communication</b> <b>Chair: Toshiharu Sugawara</b>	<b>S8: Invited Session on Intelligent Agents with Semantic Technology (IAST 2013)</b> <b>Chair: Trong Hai Duong</b>
	<b>Cut-Free ExpTime Tableaux for Converse-PDL Extended with Regular Inclusion Axioms</b> <i>Linh Anh Nguyen</i>	<b>Automatic Reuse of Interaction Protocols in Mas: Arip Model</b> <i>Sami Khalfaoui, Wided Lejouad Chaari</i>
	<b>Abstract Test Suite Specification for ACL Communicating Agents</b> <i>Marina Bagic Babac, Dragan Jevtic</i>	<b>A Method for Knowledge Integration Using Indeterminate Model of Time with Criterion O2</b> <i>Van Du Nguyen, Ngoc Thanh Nguyen</i>
	<b>On the Horn Fragments of Serial Regular Grammar Logics with Converse</b> <i>Linh Anh Nguyen, Andrzej Szalas</i>	<b>A Layered Adjustable Autonomy Approach for Dynamic Autonomy Distribution</b> <i>Salama A. Mostafa, Mohd Sharifuddin Ahmad,</i>

	<p><b>Perceiving Speech Acts under Incomplete and Inconsistent Information</b>  <i>Barbara Dunin-Kępłicz, Alina Strachocka, Andrzej Szalas, Rineke Verbrugge</i></p> <p><b>A Deduction-based System for Formal Verification of Agent-ready Web Services</b>  <i>Radosław Klimek</i></p>	<p><i>Muthukkaruppan Annamalai, Azhana Ahmad, Ghusoon Salim Basheer</i></p> <p><b>K-depth RDF Keyword Search Algorithm Based on Structure Indexing</b>  <i>Minho Bae, Duc Nguyen, Sanggil Kang, Sangyoon Oh</i></p> <p><b>An Efficient Method for Hiding High Utility Itemsets</b>  <i>Bay Vo, Chun-Wei Lin, Tzung-Pei Hong, Vinh V. Vu, Minh Nguyen, Bac Le</i></p>
12:30 - 13:30	Lunch	
13:30 - 15:30	<p><b>S9: Multi-Agent Systems Design and Implementation</b>  Chair: Linh Anh Nguyen</p> <p><b>Erlang as a High Performance Software Agent Platform</b>  <i>Wojciech Turek</i></p> <p><b>Travel Routes Flexibility in Transport Systems</b>  <i>Frantisek Capkovic</i></p> <p><b>On Scalable, Event-Oriented Control for Lighting Systems</b>  <i>Igor Wojnicki, Leszek Kotulski, Sebastian Ernst</i></p> <p><b>Emergence of Collective Escaping Strategies in Caribou Agents</b>  <i>Kun Tian, Ivan Tanev, Katsunori Shimohara</i></p> <p><b>On Acceleration of Multi-Agent System Performance in Large Scale Photometric Computations</b>  <i>Adam Sędziwy</i></p>	<p><b>S10: Invited Session on Intelligent Agents with Semantic Technology (IAST 2013)</b>  Chair: Trong Hai Duong</p> <p><b>A Method for the Generation of Semantic Annotation from Sport News Using Ontology Based Patterns</b>  <i>Quang-Minh _guyen, Tuan-Dung Cao, Thanh-Hien Phan, Hoang-Cong Nguyen, Tatsuya Hagino</i></p> <p><b>A Multi-Agent Architecture for Health Information Systems</b>  <i>Luca Palazzo, Matteo Rossi, Aldo Franco Dragoni, Andrea Claudi, Gianluca Dolcini, Paolo Sernani</i></p> <p><b>Web Service Composition with Petri Net and Ontology</b>  <i>Azizbek Marakhimov, Jaeeol Yim, Jaehun Joo</i></p> <p><b>A New BDI Architecture To Formalize Cognitive Agent Behaviors Into Simulations</b>  <i>Van-Minh Le, Benoit Gaudou, Patrick Taillandier, Duc-An Vo</i></p> <p><b>Agent-based Military Engagement Simulation System Architecture with Implementation</b>  <i>Won K. Hwam, Yongho Chung, Junghoon Kim, Sang C. Park</i></p>
15:30 - 16:00	Coffee break	
16:00 - 17:00	<p><b>S11: New Directions in Agents Research Workshop</b>  Chair: Nguyen Cong Hao</p> <p><b>Using high-level 3D Graphics library in agent-based simulation platform</b>  <i>Arnaud Grignard</i></p> <p><b>Improving the Interpretability of Support Vector Machines-based Fuzzy Rules</b>  <i>Duc-Hien Nguyen, Dr Manh-Thanh Le</i></p> <p><b>Design and Application of Semantic Business Collaboration on the Cloud</b>  <i>Ching-Long Yeh</i></p>	
19:00 - 21:00	Banquet and Closing Ceremony (Huong Giang Hotel)	

## Conference Venue, Lunch, Banquet and Hotels:





**Wednesday, 29/05/2013**

**Hue City Tour of AMSTA 2013**

**Visit to Tu Duc Emperor tomb**

**Tu Duc Emperor Tomb**

Tu Duc's tomb is located in a narrow valley in Duong Xuan Thuong village (currently Thuong Ba village, Thuy Xuan Commune, Hue City). It is one of the most beautiful works of royal architecture of the Nguyen dynasty. The tomb lies in a boundless pine forest, 8 km from Hue.

Its construction started in December 1864 and finished in 1867. Inside the surrounding wall about 12 hectares wide, nearly 50 constructions were built on terraces of various levels (about 10m difference). All constructions include the word Khiem (Modesty) in their names.



**The tomb is divided into two main parts:**

**The temple area:**

Entering Vu Khiem entrance, there is Luu Khiem lake. On the lake are Xung Khiem Pavilion and Du Khiem Pavilion where the Emperor used to come to admire flowers, compose poems, read books, etc.

Then, three Thanh stone steps to Khiem Cung gate lead to Hoa Khiem Palace, which used to be the Emperor's working place, and is now the altar devoted to the Emperor and the Queen. On both sides are Phap Khiem House and Le Khiem House for the military and civil mandarins.

Behind Hoa Khiem Palace is Luong Khiem Palace, which was also the Emperor's resting place, and was later used to worship Mrs. Tu Du (Tu Duc's Mother). On the right of Luong Khiem

Palace stand On Khiem Palace, where the royal utensils are kept. On the left of Luong Khiem Palace is Minh Khiem theatre. Then, comes Chi Khiem, the altar to worship the Emperor's wives, Tri Khiem Palace and Y Khiem Palace were the accommodations of the Emperor's concubines.

**The tomb area:**

On the left of the temple is the necropolis itself slopping upward with the Honour Courtyard, the Stele Pavilion, and the seplucre. Rightbehind Bai Dinh (Honour Courtyard), with two rows of magnificent military and civil mandarins, is Bi Dinh (Stele Pavilion) with the biggest stone stele in Vietnam. It is inscribed with Khiem Cung narrative, composed by the Emperor himself, writing about his life and imperial cause as well as his misadventures and diseases, etc. On the hill, opposite the semi-circular Tieu Khiem Tri lake, is the Buu Thanh brick wall, in the middle is a stone house, where the Emperor was buried.



Tu Duc's tomb is not only one of the most beautiful works of the Nguyen dynasty, but it is also romantic scenery of mounts and lakes.

**More Information: Hue capital city and World cultural heritage:**

The fact that the Nguyen Dynasty selected Hue as its capital and invested in construction during one and a half centuries has left Hue city with a voluminous cultural heritage.

This includes material architecture with a complex of splendid and luxurious palaces, mausoleums, citadel and ramparts, temples and others. Moreover, an intangible heritage, consisting of precious spiritual sources, habits and customs, festivals, art branches, and traditional handicrafts, which were constructed by the great effort of generations, has given Hue city a salient and specific value, as well as its own unique identity.





This romantic land area has had to undergo many fierce wars and severe impacts of environment and climate. Consequently, the Hue monument complex was once seriously degraded. In a visit to Hue in November 1981, the General Director of UNESCO, Mr. Amadou Mahtar M'Bow had to appeal for 'saving Hue' with words from the bottom of his heart, "Hue, where the national culture identity is apparent, must be saved for Vietnam and the world because Hue is a component of mankind's cultural heritage".

Many positive action programs have been implemented by Hue-UNESCO Workgroup and the Vietnamese authorities, in order to gradually restore and preserve the Hue monument complex since that appeal was put forth. The efforts made in the following twelve years have brought a happy result; namely that the Hue Ancient Capital City was listed in the world cultural heritages by the World Heritage Council in December 1993. It is written: "Hue's monument complex is a typical example of the urbanization and architecture of a defensive capital. It shows the power of Vietnam's ancient feudal kingdom in the splendid age of the 20th century." Hue's monument complex has become the 410 th heritage site in the list of world heritages.

