APPLIED COMPUTING 2014
The 29th Annual ACM Symposium on Applied Computing

PROCEEDINGS OF THE 2014 ACM SYMPOSIUM ON APPLIED COMPUTING

Gyeongju, Korea
March 24-28, 2014

Organizing Committee

Jeongyong Byun
Yookun Cho
Hisham M. Haddad
Ho-Sang Ham
Jiman Hong
Chih-Cheng Hung
Soon Ki Jung

Dongkyun Kim
Sangwook Kim
Tei-Wei Kuo
Dongwan Shin
Sung Y. Shin
Sangsoo Sung

Information Systems
(ACI, COSYS, DS, DTTA, HC, HCI, IAR, MMV)

Software Development
(RE, SATTA, SE, SEGC, SOAP, SVT, UIG)

AI and Agents
(BHI, CIVIA, DM, EC, IIF, IILE, RS, SWA)

Distributed Systems
(CC, DADS, MCA, NET, SGST, SONAMA, WCN, WT)

System Software and Security
(CM, CSP, EE, EMBS, MP, OS, OOPS, PL, PSC, SEC, TRECK)

Hosted by
Soongsil University
Seoul National University
Kyungpook National University
Dongguk University
### ***** SAC 2014 at Glance *****

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<tbody>
<tr>
<td>AM Tutorials (9:00am-12:30pm)</td>
<td>Keynote Session (9:00am-10:40am)</td>
<td>AM Breakout Sessions (9:00am-10:40am)</td>
<td>Keynote Session (9:00am-10:40am)</td>
<td>AM Breakout Sessions (10:00am-11:40am)</td>
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<tr>
<td>Coffee Break (10:30am-11:00am)</td>
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<td>AM Breakout Sessions (11:10am-12:50pm)</td>
<td>AM Breakout Sessions (12:10am-1:50pm)</td>
</tr>
<tr>
<td>Tutorials Social Luncheon for Lunch Ticket Holders (12:30pm-2:30pm) Baeksanggwan Hall</td>
<td>SAC Luncheon For all Registered Attendees (Tickets) (12:50pm-2:00pm) Baeksanggwan Hall</td>
<td>SAC Luncheon For all Registered Attendees (Tickets) (12:50pm-2:00pm) Baeksanggwan Hall</td>
<td>SAC Luncheon For all Registered Attendees (Tickets) (12:50pm-2:00pm) Baeksanggwan Hall</td>
<td>SAC Luncheon For all Registered Attendees (Tickets) (1:50pm-3:00pm) Baeksanggwan Hall</td>
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<tr>
<td>PM Tutorials (2:30pm-6:00pm)</td>
<td>PM Breakout Sessions (2:00pm-5:30pm)</td>
<td>PM Breakout Sessions (2:00pm-5:30pm)</td>
<td>PM Breakout Sessions (2:00pm-5:30pm)</td>
<td>Conference Ends at 3:10PM</td>
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<td>Coffee Break (3:50pm-4:20pm)</td>
<td>Coffee Break (3:50pm-4:20pm)</td>
<td>Coffee Break (3:30pm-4:00pm)</td>
<td>Thank you for your participation and hope to see you next year in Salamanca, Spain</td>
</tr>
<tr>
<td>SRC Posters Exhibit (2:30pm-5:30pm)</td>
<td>SRC Oral Presentations (2:30pm-4:00pm)</td>
<td>SRC Oral Presentations (2:30pm-4:00pm)</td>
<td>PM Posters Session (2:30pm-5:00pm)</td>
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<tr>
<td>SIGAPP Annual Business Meeting (5:30pm-6:00pm)</td>
<td>Future SAC Organization Meeting (6:00pm-7:00pm) At Gyeongju Choe Family Academy</td>
<td>Track Chairs Business Meeting (5:00pm-5:30pm)</td>
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<tr>
<td>SIGAPP Reception (7:30pm-10:00pm) At Hilton Gyeongju Art Museum</td>
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</tbody>
</table>

Thank you for your participation and hope to see you next year in Salamanca, Spain.
### Technical Program Session Schedule

**Tuesday March 25, 2014**

<table>
<thead>
<tr>
<th>Room</th>
<th>9:00 - 10:40am</th>
<th>11:10 - 12:50pm</th>
<th>2:00 - 3:50pm</th>
<th>4:20 - 5:30pm</th>
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</thead>
<tbody>
<tr>
<td>Room D501</td>
<td>Keynote Address (Room D001)</td>
<td>DM-1 (5)</td>
<td>DM-2 (5)</td>
<td></td>
</tr>
<tr>
<td>Room D302</td>
<td>MCA-1 (4)</td>
<td>MCA-2 (3)</td>
<td>CC (4)</td>
<td></td>
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<tr>
<td>Room D303</td>
<td>DS (4)</td>
<td>DTTA-1 (4)</td>
<td>DTTA-2 (3)</td>
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<tr>
<td>Room D408</td>
<td>RE (5)</td>
<td>SE-1 (4)</td>
<td>SE-2 (4)</td>
<td></td>
</tr>
<tr>
<td>Room D301</td>
<td>TRECK (4)</td>
<td>OS-1 (5)</td>
<td>OS-2 (5)</td>
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**Wednesday March 26, 2014**

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<thead>
<tr>
<th>Room</th>
<th>9:00 - 10:40am</th>
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<th>4:20 - 5:30pm</th>
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<tbody>
<tr>
<td>Room D501</td>
<td>SWA-1 (3)</td>
<td>SWA-2 (2)+IIF (2)</td>
<td>RS-1 (4)</td>
<td>RS-2 (2)</td>
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<td>Room D302</td>
<td>WT(5)</td>
<td>SGST(5)</td>
<td>WCN-1 (4)</td>
<td>WCN-2 (4)</td>
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<tr>
<td>Room D303</td>
<td>MMV-1 (4)</td>
<td>MMV-2 (4)</td>
<td>IAR (5)</td>
<td>SONAMA-1 (4)</td>
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<tr>
<td>Room D408</td>
<td>SE-3 (4)</td>
<td>SE-4 (5)</td>
<td>SEG (4)</td>
<td>SOAP (4)</td>
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<tr>
<td>Room D301</td>
<td>MP (3)</td>
<td>PL-1 (4)</td>
<td>PL-2 (3)</td>
<td>PSC (2)</td>
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**Thursday March 27, 2014**

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<tr>
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<th>2:00 - 3:30pm</th>
<th>4:00 - 5:30pm</th>
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</thead>
<tbody>
<tr>
<td>Room D302</td>
<td>Keynote Address (Room D001)</td>
<td>IILE (4)</td>
<td>BHI (5)</td>
<td>CIVIA (3)</td>
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<tr>
<td>Room D303</td>
<td></td>
<td></td>
<td>POSTERS SESSION</td>
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<tr>
<td>Room D408</td>
<td>SONAMA-2 (4)</td>
<td>SONAMA-3 (3)</td>
<td>COSYS (2)</td>
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<tr>
<td>Room D301</td>
<td>SVT-1 (4)</td>
<td>SVT-2 (4)</td>
<td>CM (3)</td>
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<td>EMBS (5)</td>
<td>EE-1 (4)</td>
<td>EE-2 (3)</td>
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**Friday March 28, 2014**

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<thead>
<tr>
<th>Room</th>
<th>10:00 - 11:40am</th>
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<tbody>
<tr>
<td>Room D302</td>
<td>SEC-1 (4)</td>
<td>SEC-2 (4)</td>
<td>3rd Floor : D301, D302, D303, D304</td>
</tr>
<tr>
<td>Room D303</td>
<td>DADS (5)</td>
<td>NET (5)</td>
<td>4th Floor : D407, D408</td>
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<tr>
<td>Room D408</td>
<td>HCI (4)</td>
<td>HC (5)</td>
<td>5th Floor : D501</td>
</tr>
<tr>
<td>Room D301</td>
<td>EC (2)+ UIG (2)</td>
<td>SATTA (4)</td>
<td><strong>Notes:</strong> Please note that the number inside the parentheses is the number of papers scheduled in the session.</td>
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</table>

### Themes and their Tracks

- **AI & Agents (8)**
  - BHI, CIVIA, DM, EC, IIF, IILE, RS, SWA
- **Distributed Systems (8)**
  - CC, DADS, MCA, NET, SGST, SONOMA, WCN, WT
- **Information Systems (8)**
  - (ACI), COSYS, DS, DTVA, HC, HCI, IAR, MMV
- **Software Development (7)**
  - RE, SATTA, SE, SEG, SOAP, SVT, UIG
- **System Software & Security (11)**
  - CM, CSP, EE, EMBS, MP, OS, OOPS, PL, PSC, SEC, TRECK
SAC 2014

Introduction

SAC 2014 is a premier international conference on applied computing and technology. Attendees have the opportunity to hear from expert practitioners and researchers about the latest trends in research and development in their fields. SAC 2014 features two keynote speakers on Tuesday and Thursday, from 9:00 to 10:40. The technical program of the symposium consists of 42 tracks on different research topics, which run from Monday March 24 through Friday March 28, 2014. Regular oral presentation sessions start at 9:00 and end at 18:00 in five parallel sessions. Two poster tracks also run on Thursday March 27, from 9:40 to 12:50 and from 14:40 to 17:40. In addition, the Student Research Competition (SRC) program, sponsored by Microsoft Research. SRC posters display session runs on Tuesday from 14:30 to 17:30 and SRC Presentations session runs on Wednesday from 14:30 to 16:00.

ACM SIGAPP

The ACM Special Interest Group on Applied Computing is ACM’s primary applications-oriented SIG. Its mission is to further the interests of the computing professionals engaged in the development of new computing applications and applications areas and the transfer of computing technology to new problem domains. SIGAPP offers practitioners and researchers the opportunity to share mutual interests in innovative application fields, technology transfer, experimental computing, strategic research, and the management of computing. SIGAPP also promotes widespread cooperation among business, government, and academic computing activities. Its annual Symposium on Applied Computing (SAC) provides an international forum for presentation of the results of strategic research and experimentation for this inter-disciplinary environment. SIGAPP membership fees are: $15.00 for ACM Non-members, $15.00 for ACM Professional Members, and $8.00 for ACM Student Members. For further information on SIGAPP, please contact Sung Shin at Sung_Shin@sdstate.edu or visit the SIGAPP website at http://www.acm.org/sigapp.

Support

Local support for SAC 2014 is provided by Soongsil University, Seoul National University, Kyungpook National University, Dongguk University, Gyeongju City, National Research Foundation, Korea Tourism Organization, Korea Internet & Security Agency, Korea Economic Daily, Cham Engineering, and Hybus Technology. The organizing committee acknowledges and thanks the local sponsors for their contributions. Their support has been essential to the success of the Symposium, and it is greatly appreciated.

Symposium Chair Message

Sung Y. Shin
South Dakota State University, USA

On behalf of the Organizing Committee, we welcome you to the 29th Annual ACM Symposium on Applied Computing (SAC 2014), hosted by Kyungbook National University and Donggook University. This international forum has been dedicated to computer scientists, engineers and practitioners for the purpose of presenting their research findings and results in various areas of applied computing. The organizing committee is grateful for your participation in this exciting international event. We hope that this conference proves interesting and beneficial for all of you.

The Symposium is sponsored by the ACM Special Interest Group on Applied Computing (SIGAPP), whose mission is to further the interests of computing professionals engaged in the design and development of new computing applications, interdisciplinary applications areas, and applied
research. This conference is dedicated to the study of applied computing research of real-world problems. In addition, this event provides an avenue to discuss and exchange new ideas in the wide spectrum of applied computing areas. We all recognize the importance of updating the latest developments and research in our current areas of expertise.

SAC 2014 offers Technical Tracks and Poster Sessions. The success of the conference can be attributed to the substantial contribution of dedicated Track Chairs and Co-Chairs. Each track maintains a program committee and a set of highly qualified reviewers. We wish to thank the Track Chairs, Co-Chairs, Committee Members and participating reviewers for their hard work and effort to make the SAC 2014 conference a high quality conference. We also thank our invited keynote speakers, Dr. Amir G. Aghdam, Concordia University, Montreal, Quebec, and Dr. Sang Hyuk Son, Gyeongbuk Institute of Science and Technology, Daegu, for sharing their knowledge and expertise with SAC 2014 attendees. Most of all, I would like to especially thank the authors and presenters for sharing their experience with the rest of us and to all attendees for joining us in Gyeongju, Korea this year.

The local organizing committee has been a major contributor to the success of the SAC 2014 conference. Our gratitude goes to the Conference Honorarium Chair, Dr. Yookun Cho, Seoul National University, Seoul, Korea, the Program Honorarium Chair, Dr. Sangwook Kim, Kyungpook National University, Daegu, Korea, the Local Arrangement Co-Chairs, Dr. Dongkyun Kim, Kyungpook National University, Daegu, Korea, and the Local Arrangement Co-Chair Dr. Jeongyong Byun, Dongguk University, Gyeongju, Korea.

We also extend our thanks to the Publication Chair, Dr. Dongwan Shin, New Mexico Tech, Socorro, New Mexico, for his tremendous effort in putting together the conference proceedings, Posters Chair, Dr. Prof. Soon Ki Jung, Kyungpook National University, Daegu, Korea, for his hard work to make a successful Poster Program, and Tutorials Chair Dr. Tei-Wei Kuo Academia Sinica & National Taiwan University, Taipei, Taiwan, for arranging an exciting set of Tutorials. A special thanks to our Program Chairs Dr. Chih-Cheng Hung, Southern Polytechnic State University, Marietta, Georgia, and Dr. Jiman Hong, Soongsil University, Seoul, Korea for coordinating and bringing together an excellent Technical Program.

Again, we welcome you to SAC 2014 in the beautiful city of Gyeongju, Korea. We hope you enjoy the SAC 2014 conference and your stay in Korea. Next year, we invite you to participate in SAC 2015 to be held in Salamanca, Spain. The conference will be hosted by University of Salamanca.

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**Program Chairs Message**

**Chih-Cheng Hung**  
*Southern Polytechnic State University, Marietta, USA*

**Jiman Hong**  
*Soongsil University, Seoul, Korea*

Welcome to the 29th International Symposium on Applied Computing (SAC 2014). For the past 28 years, SAC has become a major international venue for computing researchers and applied practitioners to convene and share ideas on recent developments in a variety of applied areas of information technology. The success of SAC has been the consolidation of a wide range of applied areas into specialized modules called Tracks. Each of the Tracks is then organized and administered by experts in the respective areas by instituting program committees, carrying out blind reviews according to the ACM guidelines, and finally selecting the highly qualified papers for the Track. Since its inception eight years ago, the Poster Sessions at SAC have become a tradition, and this year again the Poster will be an integral part of the Technical Program at SAC 2014.

The open Call for Track Proposals and after prescreening the proposals, 42 Tracks were finally accepted for SAC 2014. The prescreening and selections were made based on the success of those Tracks in the previous SACs as well as targeting new and emerging areas. The Call for Papers for these Tracks attracted 939 final paper submissions from 50 different countries. The submitted papers underwent the blind review process and 218 papers were finally accepted as full papers for inclusion in the Conference Proceedings and presentation during the Symposium. The final acceptance rate for SAC 2014 is 23.2% for the overall track. In addition to the accepted full papers, 89 papers that received high enough review scores were accepted as short papers for the Poster program. The Student Research Competition (SRC) program, sponsored by Microsoft Research, is a new addition to SAC 2014. The SRC program is designed to provide graduate students the opportunity to meet and exchange ideas with researchers and practitioners in their areas of interest. We received 41 submissions and accepted 12 papers for the SRC program.

The Technical Program of SAC 2014 is made possible through the hard work of many people from the scientific community who have volunteered and committed many hours to make it a success. Much credit goes to all Track Chairs for making SAC 2014 Technical Sessions a huge success. Some of the popular Tracks had an unprecedented submissions...
and having three blind reviews for each paper was certainly a major challenge. Once again this year, we follow the previous years’ tradition in organizing various tracks into five different themes. The Proceedings and the technical presentations are focused around these themes to form a series of related track sessions.

On behalf of SAC 2014 Organizing Committee, we congratulate all the authors for having their papers accepted in their respective Tracks, and we wish to thank all of those who made this year’s technical program a great success. Specifically we wish to thank the speakers, posters chair, track chairs, reviewers, program committee members, session chairs, presenters, and all the attendees. We also wish to convey our special thanks to the local organizing committee lead by Dr. Yookun Cho from Seoul National University, Seoul, Korea, Dr. Sangwook Kim, Kyungpook National University, Daegu, Korea, Dr. Jeongyoung Byun from Dongguk University, Gyeongju, Korea and Dr. Dongkyun Kim from Kyungpook National University, Daegu, Korea.

We wish you all a pleasant stay in Gyeongju, hope you have a great time at SAC 2014, and you will have the opportunity to share and exchange your ideas and foster new collaborations. We would also like to take this opportunity to convey to you the news that the 30th International Symposium on Applied Computing (SAC 2015) will be held in the historic city of Salamanca, Spain, which was declared a UNESCO World Heritage. We hope to see you all at SAC 2015.

**SAC 2014 Themes**

This year SAC tracks are divided into five themes: related themes will be associated to one room, hence related tracks will take place sequentially in the same room in most cases, so as to promote sharing and cross-fertilization of ideas through the whole audience of a theme. Check the program schedule for details. The five themes of SAC 2014 are listed below:

(AIA) **AI and Agents**: Tracks: BHI, CIVIA, DM, EC, IIF, IILE, RS, SWA

(DS) **Distributed Systems**: Tracks: CC, DADS, MCA, NET, SGST, SONOMA, WCN, WT

(IS) **Information Systems**: Tracks: (ACI), COSYS, DS, DT TA, HC, HCl, IAR, MMV

(SD) **Software Development**: Tracks: RE, SATTA, SE, SEGC, SOAP, SVT, UIG

(SSS) **System Software and Security**: Tracks: CM, CSP, EE, EMBS, MP, OS, OOPS, PL, PSC, SEC, TRECK

**Keynote Speakers**

**Tuesday March 25, 2014 9:00 - 10:40AM**

**Dr. Amir G. Aghdam**
Department of Electrical & Computer Engineering Concordia University Montreal, Quebec, Canada

**Distributed Connectivity Assessment of Underwater Sensors Network**

**Abstract**
In this keynote, the problem of distributed connectivity assessment for a network of underwater sensors is presented. Motivated by a sufficient condition for asymptotic almost-sure consensus in a network represented by a random directed graph (digraph), vertex connectivity of the expected communication graph is used as a measure of the connectivity of the underwater sensor network. A distributed update scheme is proposed in which the sensors update their perception of the expected communication graph. A learning algorithm is employed by each sensor to update its belief of the probabilities of different graph edges using the broadcast messages it receives. Each sensor uses a polynomial-time algorithm to estimate the degree of vertex connectivity of the expected graph based on its perception of the network graph. The proposed algorithms can also handle changes in the topology of the network such as node addition, node deletion, and time-varying probabilities. A weighted vertex connectivity degree is also proposed which takes the randomness of the network into consideration in the connectivity measure. The results are subsequently used to evaluate the importance of each node in the overall connectivity of the network. The performance of the algorithms is validated by simulation.

**Speaker's Bio**
Professor Amir G. Aghdam received the B.A.Sc. degree from Isfahan University of Technology, Isfahan, Iran and the M.A.Sc. degree from Sharif University of Technology, Tehran, Iran, both in Electrical Engineering. He received his Ph.D. degree from the University of Toronto in 2000 and worked as a development engineer at Voyan Technology, Santa Clara, California from 2000 to 2001. He was a postdoctoral researcher at the systems control group of the University of Toronto for six months and then joined Concordia University in 2002, where he is currently a Professor in the Department of Electrical and Computer Engineering. Dr. Aghdam is a member of Professional Engineers of Ontario and a senior member of the IEEE. He served as Chair of the IEEE Montreal Section and Chair of the Control Systems Chapter of the IEEE Montreal Section (2005–2006), and Chair of the IEEE Eastern Canada Area (2007–2009). He was the Editor-in-Chief of IEEE Canadian Review (2010–2012), and General Chair of the 2012 IEEE International Conference on Systems, Man, and Cybernetics (2012). He was also the Editor-in-Chief of IEEE Transactions on Systems, Man, and Cybernetics—Part B (2012–2014) and the Editor-in-Chief of IEEE Transactions on Control of Network Systems (2015–Present). He is a fellow of the IEEE.
IEEE Canadian Conference on Electrical and Computer Engineering. Dr. Aghdam is a member of the Conference Editorial Board of IEEE Control Systems Society, Co-Editor-in-Chief of the IEEE Systems Journal, an Associate Editor of the IEEE Transactions on Control Systems Technology and European Journal of Control. He has been a Technical Program Committee Member of a number of conferences including IEEE Conference on Control Applications, IEEE Conference on Decision and Control, and American Control Conference. Since August 2013, he has been a member of Natural Science and Engineering Research Council of Canada (NSERC) ECE Evaluation Group. He is a recipient of the 2009 IEEE MGA Achievement Award, and 2011 IEEE Canada J. J. Archambault Eastern Canada Merit Award. His research interests include multi-agent networks, graph theory, optimization and sampled-data systems.

Thursday March 27, 2014 9:00 - 10:40AM

Professor Sang Hyuk Son
Real-Time Cyber-Physical Systems Research Laboratory
Department of Information and Communication Engineering
Daegu Gyeongbuk Institute of Science and Technology

Computing for the Smart New World

Abstract
With continuing miniaturization and increased wireless connectivity, the computing systems are becoming deeply embedded into everyday life and interact with processes and events of the physical world. This cyber-physical interaction has the potential to transform how humans interact with and control the physical world. Systems featuring a tight combination of, and coordination between, the system's computational and physical elements are broadly called cyber physical systems (CPS). Examples of CPS include medical devices and systems, aerospace systems, transportation systems, smart grids, robotic systems, and smart spaces. Advances in key technologies are changing how these types of systems operate. For instance, the level of uncertainty in which these systems operate is increasing, creating the need for greater robustness. Pervasive wireless access is pushing these systems to unprecedented dynamic and non-deterministic situations. There is a critical demand for CPS to be adaptive to provide robustness to meet the requirements. In this talk, we will illustrate few examples of CPS, and discuss some of the research challenges in providing robustness in CPS.

Speaker's Bio
Professor Sang Hyuk Son is IEEE Fellow and Department Chair of Information and Communication Engineering at DGIST. He has been a Professor of Computer Science Department at the University of Virginia, and WCU Chair Professor at Sogang University. He received the B.S. degree in electronics engineering from Seoul National University, M.S. degree from KAIST, and the Ph.D. in computer science from University of Maryland, College Park. He has been a Visiting Professor at KAIST, City University of Hong Kong, Ecole Centrale de Lille in France, and Linkoping University and University of Skovde in Sweden.

Professor Son has served as the chair of the IEEE Technical Committee on Real-Time Systems during 2007-2008. He is serving as an Associate Editor for Real-Time Systems Journal and Journal on Self Computing, and has served on the editorial board of IEEE Transactions on Computers and IEEE Transactions on Parallel and Distributed Systems. He is also serving as a member of the steering committee for RTCSA, Cyber physical Systems Week, and SEUS. He received the Outstanding Contribution Award form ACM/IEEE Cyber Physical Systems Week in 2012. His research interests include cyber physical systems, real-time and embedded systems, database and data services, and wireless sensor networks. He has written or co-authored over 290 papers and edited/authored four books in these areas. His research has been funded by National Science Foundation, DARPA, Office of Naval Research, Department of Energy, National Security Agency, and IBM.

Other Activities

SIGAPP Annual Business Meeting: Tuesday March 25, from 17:30 to 18:00 in room D407. Open to everyone.

SIGAPP Reception: Tuesday March 25, from 19:30 to 22:00 in Hilton Gyeongju Art Museum. Open for everyone.

Future SAC Organization Meeting: Wednesday March 26, from 18:00 to 19:00 in Gyeongju Choe Family Academy. Open for everyone.

Track Chairs Business Meeting: Thursday March 27, from 17:00 to 17:30 in room D407. Open for the organizing committee and Track Chairs.

SAC Banquet: Thursday March 27, from 19:30 to 22:00 in Hilton Gyeongju Grand Ballroom. Open for Banquet Ticket holders. See your tickets for full details.

SAC Best Papers Award: Thursday March 27. During the SAC Banquet SAC Program Chairs will award one best paper for each of the five themes and posters of this conference.
SRC Program: The Student Research Competition program includes Poster Display on Tuesday at 2:30pm in 2nd floor lobby and Oral Presentations on Wednesday at 2:30pm in room D407. Medals and certificates will be given to the top three winners during the Banquet.

Tuesday March 25, 2014

**TUE 9:00 – 10:40**  
**D001**  
**Keynote Address**  
Dr. Amir G. Aghdam  
*See page 6 for details.*

**TUE 10:40 – 11:10**  
**Coffee Break**  
**2ND FLOOR LOBBY**

**TUE 11:10 – 12:50**  
**D501**  
**(DM-1) Data Mining**  
*Session Chair: Stefan Kramer, Johannes Gutenberg-Universität Mainz, Germany*  
- Online Learning with Mobile Sensor Data for user Recognition  
  Haiguang Li, Xindong Wu, and Zhao Li  
- Fast Time Series Classification under Lucky Time Warping Distance  
  Stephan Spiegel, Brijnesh-Johannes Jain, and Sahin Albayrak  
- A Parameter-Free Label Propagation Algorithm using Bipartite Heterogeneous Networks for Text Classification  
  Rafael G. Rossi, Aline A. Lopes, and Solange O. Rezende  
- Diffusion-Based Clustering Analysis of Coherent X-Ray Scattering Patterns of Self-Assembled Nanoparticles  
  Hao Huang, Shinjae Yoo, Konstantine Kaznatcheev, Kevin G. Yager, Pang Lu, Dantong Yu, Oleg Gang, Andrei Phuerasu, and Hong Qin  
- Comparing the Staples in Latent Factor Models for Recommender Systems  
  Cheng Chen, Lan Zheng, Alex Thono, Kui Wu, and Venkatesh Srinivasan

**TUE 11:10 – 12:50**  
**D302**  
**(MCA-1) Mobile Computing and Applications**  
*Session Chair: Chung Le, Independent Software Consultant, USA*

**TUE 11:10 – 12:50**  
**D303**  
**(DS) Data Streams**  
*Session Chair: Albert Bifet, Huawei Noah Ark’s Lab, Hong Kong*

**TUE 11:10 – 12:50**  
**D408**  
**(RE) Requirements Engineering**  
*Session Chair: Alberto Silva, Instituto Superior Técnico, Lisboa, Portugal*

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**Kalimucho: Middleware for Mobile Applications**  
Keling Da, Marc Dalmau, and Philippe Roesse

**Entity-Adaptation: A Programming Model for Development of Context-Aware Applications**  
Sanjin Sehic, Stefan Nastic, Michael Vogler, Fei Li, and Schahram Dustdar

**A Model-Based Approach to Test Automation for Context-Aware Mobile Applications**  
Tobias Griebe and Volker Gruhn

**A Model Driven Framework for Modeling and Composing Service based Android Applications**  
Chung Le

**SFNCClassifier: A Scale-Free Social Network Method to Handle Concept Drift**  
Jean Paul Baridul, Heitor Murilo Gomes, and Fabricio Enembreck

**Change Detection in Categorical Evolving Data Streams**  
Dino Ienco, Albert Bifet, Bernhard Pfahringer, and Pascal Foncelet

**SAE2: Advances on the Social Adaptive Ensemble Classifier for Data Streams**  
Heitor Murilo Gomes and Fabricio Enembreck

**Adaptive Semi Supervised Opinion Classifier with Forgetting Mechanism**  
Max Zimmermann, Eirini Ntoutsi, and Myra Spiliopoulou

**Are Smartphones Better than CRC Cards?**  
Rainer Lutz, Sascha Schäfer, and Stephan Diehl

**From Requirements to Statecharts via Design Refinement**  
João Pimentel, Jackson Castro, John Mylopoulos, Konstantinos Angelopoulos, and Vitor E. Silva Souza

**Eliciting Concepts from the Brazilian Access Law using a Combined Approach**  
Priscila Engiel, Claudia Coppelli, and Julio Cesar Sampaio do Prado Leite

**Towards Software Modularization from Requirements**  
Eduardo Almendro, Julio Cesar Sampaio do Prado Leite, and Carlos Lucena

**Cloud Adoption: Prioritizing Obstacles and Obstacles Resolution Tactics using AHP**  
Shehnila Zardari, Rami Bahsoon, and Aniko Ekárt
TUE 11:10 – 12:50  D301

(TRECK) Trust, Reputation, Evidence and other Collaboration Know-how
Session Chair: Siin Rusmonaa, University of Helsinki, Finland

Case Study: Legal Requirements for the use of Social Login Features for Online Reputation Updates
Yung Shin Van Der Sype, and Jean-Marc Seigneur

Privacy Preserving Trusted Social Feedback
Anirban Basu, Juan Camilo Corena, Shinsaku Kiyomoto, Stephen Marsh, Jaideep Vaidya, Guibing Guo, Jie Zhang, and Yutaka Miyake

Privacy-Preserving Reputation Management
Ronald Petrlic, Sascha Lutters, and Christoph Sorge

MUSES: A Corporate User-Centric System which Applies Computational Intelligence Methods

TUE 12:50 – 2:00
Lunch Break
BAEKSSANGGWAN HALL

TUE 2:00 – 3:50  D501

(DM-2) Data Mining
Session Chair: Hasan Jamil, University of Idaho, USA

Single Multiplicatively Updated Matrix Factorization for Co-Clustering
Zhao Li and Xindong Wu

GEM – An Elastic and Translation-Invariant Similarity Measure with Automatic Trend Adjustment
Christian Hundt, Bertil Schmidt, Elmar Schömer, Herbert Göttert, and Hoang Vu Dang

Structural Clustering of Millions of Molecular Graphs
Madeleine Seeland, Andreas Karwath, and Stefan Kramer

Extracting Information from Support Vector Machines for Pattern-Based Classification
Madeleine Seeland, Andreas Maunz, Andreas Karwath, and Stefan Kramer

TUE 2:00 – 3:50  D302

(MCA-2) Mobile Computing and Apps
Session Chair: Yoshide Hosokawa, Gunma University, Japan

A Personalized Model for Monitoring Vital Signs using Camera of the Smart Phones
Mohammad Adibuzzaman, Sheikh Iqbal Ahmed, and Richard Love

Location-Aware Information Retrieval for Identifying Local and Distant Landmark
Yoshide Hosokawa, Yuichiro Nakazawa, and Takanori Yamamoto

Self-Management of Self-Organising Mobile Computing Applications: A Separation of Concerns Approach
Jose Luis Fernandez-Marquez, Giovanna Di Marco Serugendo, Graeme Stevenson, Juan Ye, Simon Dobson, and Franco Zambonelli

TUE 2:00 – 3:50  D303

(DTTA-1) Database Theory, Technology and Applications
Session Chair: Junping Sun, Nova Southeastern University, USA

Information Leakage Analysis of Database Query Languages
Raju Halder, Matteo Zanioli, and Agostino Cortesi

Finding Targets with the Nearest Favor Neighbor and Farthest Disfavor Neighbor by a Skyline Query
YiWen Lin, En Tsu Wang, Chieh-Feng Chiang, and Arbes L.P. Chen

LittleD: A SQL Database for Sensor Nodes and Embedded Applications
Graeme Douglas and Ramon Lawrence

Towards Semantic Diff of XML Documents
Alessandra Oliveira, Leonardo Murta, and Vanessa Braganholo

TUE 2:00 – 3:50  D408

(SE-1) Software Engineering
Session Chair: John Kim, Utica College, USA

Adaptive Random Prioritization for Interaction Test Suites
Rubing Huang, Jinfu Chen, Zhicheng Li, Rongcun Wang, and Yansheng Lu

Towards a Language-Independent Approach for Reverse Engineering of Software Product Lines
Tewfik Ziad, Christopher Henard, Mike Papadakis, Mikal Ziane, and Yves Le Traon
### Success Factors in Mobile Social Networking
Application Development: Case Study of Instagram
Rong Peng, Dong Sun, and Wei-Tek Tsai

### Schedulability Analysis Support for Automotive Systems: From Requirement to Implementation
Eun Young Kang, and Pierre-Yves Schobbens

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**TUE 2:00 – 3:50**  
**D301**  
**OS-1) Operating Systems**  
**Session Chair:** Chin-Fu Kuo, National Kaohsiung University, Taiwan

- **ICAP, a New Flash Wear-Leveling Algorithm Inspired by Locality**  
  Shi-wu Lo, Be-Hong Chen, Yu-Wei Chen, Tzu-Chieh Shen, and You-Ching Lin
- **Rollback Mechanism of Nested Virtual Machines for Protocol Fuzz Testing**  
  Kuniyasu Suzuki, Toshiki Yagi, Akira Tanaka, Yutaka Oiwa, and Etsuya Shibayama
- **An Effective Data Clustering Method based on Expected Update Time in Flash Memory Environment**  
  Duck-Ho Bae, Se-Mi Park, Sang-Wook Kim, Ji-Woong Chang, Byeong-Soo Jeong, and Seong-Je Cho
- **Delay-Based Incrementally Mapping of Virtual Machines in Cloud Computing Systems**  
  Chin-Fu Kuo and Haehan-Wen Tseng
- **Optimizing FTL Mapping Cache for Random-Write Workloads using Adaptive Block Partitioning**  
  Li-Pin Chang, Sheng-Min Huang, and Wen-Feng Li

**TUE 3:30 – 4:20**  
**Coffee Break**  
**2ND FLOOR LOBBY**

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**TUE 4:20 – 5:30**  
**D302**  
**CC) Cloud Computing**  
**Session Chair:** Aryabhata Sahu, Indian Institute of Technology, India

- **A Catalog of Security Requirements Patterns for the Domain of Cloud Computing Systems**  
  Kristian Beckers, Isabelle Côté, and Ludger Gecke
- **Generic Cloud Platform Multi-Objective Optimization Leveraging Model@run.time**  
  Donia El Rateb, François Fouquet, Grégory Nain, Jorge Augusto Meira, Michel Ackerman, and Yves Le Traon
- **Collecting Cloud Provenance Metadata with Matriohska: A Case Study with Genomic Workflows**  
  Sergio Manuel Serra da Cruz, Laci Mary M. Barbosa, Jorge Zavaleta, Raimundo M. Costa, and Maria Luiza Machado Campos
- **A Green Analysis of Mobile Cloud Computing Applications**  
  Kelvin Zhan, Chung-Horng Lung, and Pradeep Srivastava

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**TUE 4:20 – 5:30**  
**D303**  
**DTTA-2) Database Theory, Technology and Applications**  
**Session Chair:** Jumping Sun, Nova Southeastern University, USA

- **Temporal Join Processing with Hilbert Curve Space Mapping**  
  Jaime Raigosa and Jumping Sun
- **Sampling in Online Social Networks**  
  Sang-Wook Kim, Seok-Ho Youn, Ki-Nam Kim, and Sunja Park
- **Mining Key and Referential Constraints Enforcement Patterns**  
  Kaiping Liu, Hee Beng Kuan Tan, and Hongyu Zhang

**TUE 4:20 – 5:30**  
**D408**  
**SE-2) Software Engineering**  
**Session Chair:** John Kim, Utica College, USA

- **Project Centralization based on Graph Coloring**  
  Lei Ma, Cyrilre Arthus, and Hirokuni Sato
- **An Empirical Study of Requirements-Based Test Generation on an Automobile Control System**  
  Ruizhi Gao, Jeong Seo Eo, W. Eric Wong, Xinwei Gao, and Shou Yu Lee
- **Locating Fault-Inducing Patterns from Structural Inputs**  
  Hai-Feng Guo, Zongyan Qiu, and Harvey Siy
- **A Fault Deployment and Activation Approach for Testing Self-Recovery Mechanisms**  
  Kiev Gama and Didier Donsez

**TUE 4:20 – 5:30**  
**D301**  
**OS-2) Operating Systems**  
**Session Chair:** Shi-Wu Lo, National Chung Cheng University, Taiwan

- **An I/O Scheduler based on Fine-Grained Access Patterns to Improve SSD Performance and Lifespan**  
  Mingyang Wang and Yiming Hu
- **Cooperative Kernel: Online Memory Test Platform using Inter-Kernel Context Switch and Memory Isolation**  
  Heekwon Park, Dongwoo Kang, and Jongmoo Choi
- **An Empirical Exploratory Study on Operating System Reliability**  
  Rivalino Matias, Marcela Prince, Lucio Borges, Claudio Sousa, and Luan Henrique
- **An Experimental Study on Execution Time Variation in Computer Experiments**  
  Paulo Eduardo Nogueira, Rivalino Matias Jr., and Elder Vicente
DTFS: Exploiting the Similarity of Data Versions to Design a Write-Efficient File System in Phase-Change Memory
Eunji Lee, Jee-eun Jang, and Hyokyung Bahn

Wednesday March 26, 2014

WED 9:00 – 12:00 D407
Future Software Technology
Special Debate I
Hyunseung Choe, Sungkyunkwan University, Korea (Review Board Member, NRP)
Youngwhan Kim, Soongsil University, Korea (Review Board Member, NRP)
Barrett R. Bryant, University of North Texas, USA
Hisham M. Haddad, Kennasaw State University, USA
Jiman Hong, Soongsil University, Korea

WED 9:00 – 10:40 D501
(SWA-1) The Semantic Web and Applications
Session Chair: Soon Ae Chun, City University of New York, USA

Is Ontology Alignment like Analogy? Knowledge Integration with LISA
Elie Raad and Joerg Eversmann

LEGI: Context-Aware Lexicon Consolidation by Graph Inspection
Giovanni Sá, Thingo Silveira, Rodrigo Chaves, Felipe Teixeira, Fernando Mourão, and Leonardo Rocha

ICM-Wind: Semantics-Empowered Fluid Condition Monitoring of Wind Turbines
Matthias Klusch, Ankush Meshram, Patrick Kapahnke, and Andreas Schuetze

WED 9:00 – 10:40 D302
(WT) Web Technologies
Session Chair: Stefano Zacchiroli, University Paris Diderot, France

Keyboard Navigation Mechanisms in Tab Widgets: An Investigation on ARIA's Conformance
William Massami Watanabe, Rafael José Geraldo, and Renata Pontin de Mattos Fortes

WikiNEXT: A Wiki for Exploiting the Web of Data
Pavel Arapov, Michel Buffa, and Amel Ben Othmane

Enforcing Entailment Constraints in Offline Editing Scenarios for Real-Time Collaborative Web Documents
Patrick Gaubatz, Waldemar Hummer, Uwe Zdun, and Mark Strebeam

Generalizing the “Like” Button: Empowering Websites with Monitoring Capabilities
Jen Ithurraz, Her Arpetia, and Oscar Diaz

WED 9:00 – 10:40 D303
A Nonintrusive Approach for Implementing Single Database, Multitenant Services from Web Applications
Alexandre Michetti Mandueca, Rihan V. Munson, Renata P.M. Fortes, and Mariada Graça C. Pimentel

WED 9:00 – 10:40 D408
(Se-3) Software Engineering
Session Chair: Chang Oan Sung, Indiana University Southeast, USA

Using Models to Dynamically Refactor Runtime Code
Mohammed Al-Refaie, Walter Cazzola, and Robert France

Computing Contextual Metric Thresholds
Matthieu Foucault, Marc Palyart, Jean-Rémy Falleri, and Xavier Blanc

Planning for Declarative Processes
Yoann Laurent, Reda Bendraou, Souheib Baarir, and Marie-Pierre Gervais

Utilizing a Multi-Developer Network-based Developer Recommendation Algorithm to Fix Bugs Effectively
Geunseok Yang, Tae Zhang, and Byungjeong Lee

WED 9:00 – 10:40 D301
(MP) Mobile Platforms
Session Chair: Chi-Sheng Shih, National Taiwan University, Taiwan

A Copula-Based Risk Evaluation Method (C-REM) in a Corporate Mobile Banking Context
Abdullahi A.I. Abajum and Ning Zhang

Context-Aware Music Recommendation in Mobile Smart Devices
Jiwon Hong, Won-Seok Hwang, Jin-Hyung Kim, and Sang-Wook Kim
**SEDE: State Estimation-Based Dynamic Encryption Scheme for Smart Grid Communication**
Ting Liu, Yuhong Gui, Yanan Sun, Yang Liu, Yao Sun, and Feng Xiao

**SEDE: State Estimation-Based Dynamic Encryption Scheme for Smart Grid Communication**
Ting Liu, Yuhong Gui, Yanan Sun, Yang Liu, Yao Sun, and Feng Xiao

**WED 11:10 – 12:50 D303**

**(MMV-2) Multimedia and Visualization**
Session Chair: Takayuki Itoh, Ochanomizu University, Japan

**Text Entry using a Foot for Severely Motor-Impaired Individuals**
Diogo Pedrosa and Maria da Graça C. Pimentel

**Content-based Image Retrieval Towards the Automatic Characterization of Soybean Seed Vigor**
Marcus G.F. Santanna, Priscila T.M. Saito, and Pedro H. Bugatti

**Motivating People to Perform Better in Exergames: Competition in Virtual Environments**
Mateus Nunes, Luciana Nedel, and Valter Roessler

**Aero-Screen: Blimp-Based Ubiquitous Screen for Novel Digital Signage and Information Visualization**
Hirosaki Tobita

**WED 11:10 – 12:50 D301**

**(PL-1) Programming Languages**
Session Chair: Marjan Mernik, University of Maribor, Slovenia

**Locking Fast**
Manuel Serrano and Johan Grande

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**WED 10:40 – 11:10**

**Coffee Break**

**2ND FLOOR LOBBY**

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**WED 11:10 – 12:50 D501**

**(SWA-2) Semantic Web and Its Applications**
Session Chair: Sangsoo Sung, Google, USA

**Towards an Enterprise Ontology Pattern Language**
Ricardo de Almeida Falbo, Fabiano Borges Ruy, Monalesa Perini Barcellos, Giancarlo Guizzardi, and João Paulo Andrade Almeida

**Intelligent Event Processing for Emergency Medical Assistance**
Holger Billhardt, Martin Lujak, Sascha Ossowski, Ralf Bruns, and Jürgen Dunkel

**Parametric Investigation of a Distributed Strategy for Multiple Agents Systems Applied to Cooperative Tasks**
Rodrigo Calvo, Janderon R. de Oliveira, Mauricio Figueiredo, and Roseli Ap. Romero

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**WED 11:10 – 12:50 D302**

**(SGST) Smart Grid and Smart Technologies**
Session Chair: Dongwan Shin, New Mexico Tech, USA

**3D Cloud Detection and Tracking for Solar Forecast using Multiple Sky Imagers**
Zhennzhou Peng, Shinjake Yoo, Danfong Yu, Dong Huang, Paul Kalb, and John Heiser

**Dealing with Storage without Forecasts in Smart Grids: Problem Transformation and Online Scheduling Algorithm**
Giorgos Georgiadis and Marina Papatriantafilou

**Design of an Automatic Demand-Side Management System based on Evolutionary Algorithms**
Edgar Galván-López, Adam Taylor, Siobhán Clarke, and Vinny Cahill

**Lightweight Privacy for Smart Metering Data by Adding Noise**
Pedro Barbosa, Andrey Brito, Hyggo Almeida, and Sebastian Clauß

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**Final Program**

**Page 12**

**SAC 2014, March 24 – 28,**
**Fully Abstract Trace Semantics for Low-Level Isolation Mechanisms**  
Marco Patrignani and Dave Clarke

**Defining the Syntax of Extensible Languages**  
Leonardo V.S. Reis, Vladimir O. Di Iorio, and Roberto S. Bigonha

**Formal Derivation and Extraction of a Parallel Program for the All Nearest Smaller Values Problem**  
Frédéric Legaux, Simon Robillard, Julien Tessier, Joefrey Legaux, and Zhenjiang Hu

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**Wed 12:50 – 2:00**  
Lunch Break  
**BAEKSSANGGWAN HALL**

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**Wed 2:30 – 4:00**  
**D407**  
**SRC Oral Presentations**  
*See page 22 for details.*

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**Wed 2:00 – 3:50**  
**D501**  
*RS-1* Recommender Systems: Theory and Applications  
*Session Chair: Bracha Shapira, Ben-Gurion University, Israel*

- **From Ratings to Trust: An Empirical Study of Implicit Trust in Recommender Systems**  
  Guibing Guo, Jie Zhang, Daniel Thalmann, Amurban Basu, and Neil Yorke-Smith

- **Recommendation based on Weighted Social Trusts and Item Relationships**  
  Di Wang, Jun Ma, Tae Lain, and Lei Guo

- **Instant Expert Hunting: Building an Answerer Recommender System for a Large Scale Q&A Website**  
  Tianjian Chen, Jing Cai, Hao Wang, and Yu Dong

- **Beyond Personalization and Anonymity: Towards a Group-Based Recommender System**  
  Shang Shang, Yuk Hui, Pan Hui, Paul Cuff, and Sanjeev Kulkarni

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**Wed 2:00 – 3:50**  
**D302**  
*WCN-1* Wireless Communications and Networking  
*Session Chair: Dongkyun Kim, Kyungpook National University, Korea*

- **Self-Localisation in Indoor Environments Combining Learning and Evolution with Wireless Networks**  
  Gustavo Pessin, Fernando S. Osózio, Jo-Urayama, Denis P. Wolf, Renan C. Moidi, and Patricia A. Vargas

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**Wed 2:00 – 3:50**  
**D303**  
*IA&R* Information Access and Retrieval  
*Session Chair: Dino Ienco, IRSTEA, Montpellier, France*

- **GeoTime-Based Tag Ranking Model for Automatic Image Annotation**  
  Mădălina Mitran, Guillaume Cabanac, and Mehand Boughanem

- **A New Local Feature Extraction Approach for Content-Based 3D Medical Model Retrieval using Shape Descriptor**  
  Leila C.C. Bergamasco and Fatima L.S. Nunes

- **C-Rank: A Contribution-Based Web Page Ranking Approach**  
  Dong-Jin Kim, Sang-Chul Lee, Ho-Yong Son, Sang-Wook Kim, and Jae Bom Lee

- **Recommend-Me: Recommending Query Regions for Image Search**  
  Thanh Duc Ngo, Sang Phan, Duy-Dinh Le, and Shin’ichi Satoh

- **Personalized Collaborative Filtering: A Neighborhood Model based on Contextual Constraints**  
  Edson B. Santos Jr., Rudinei Goularte, and Marcelo G. Manzato

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**Wed 2:00 – 3:50**  
**D408**  
*SEG* Software Engineering Aspects of Green Computing  
*Session Chair: Mehmet Akşit, University of Twente, Netherlands*

- **EACOF: A Framework for Providing Energy Transparency to Enable Energy-Aware Software Development**  
  Hayden Field, Glen Anderson, and Kerstin Eder

- **Unit Testing of Energy Consumption of Software Libraries**  
  Adel Noureddine, Romain Rouvoy, and Lionel Seinturier

- **A Tool-Supported Approach for Modular Design of Energy-Aware Software**  
  Steven te Brinke, Somayeh Malakuti, Christoph Bockisch, Lodewijk Bergmans, Mehmet Akşit, and Shmuel Katz

- **Method Reallocation to Reduce Energy Consumption: An Implementation in Android OS**  
  Luis Corral, Anton B. Georgiev, Alberto Stilitti, and Giancarlo Stucchi
### WED 2:00 – 3:50  D301

**(PL-2) Programming Languages**  
**Session Chair:** Barrett Bryant, University of North Texas, USA  

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<tr>
<th>Title</th>
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<tbody>
<tr>
<td>Nested Atomic Sections with Thread Escape: A Formal Definition</td>
<td>Frédéric Dabrowski, Frédéric Loulegare, and Thomas Pinsard</td>
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<tr>
<td>Arithmetic Algorithms for Hereditarily Binary Natural Numbers</td>
<td>Paul Tarau and Bill Buckles</td>
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<td>Extending JUnit 4 with Java Annotations and Reflection to Test Variant Model Transformation Assets</td>
<td>Fábio Paulo Basso, Toacy Cavalcante Oliveira, and Kleinner Parias</td>
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### WED 3:50 – 4:20  2ND FLOOR LOBBY

### WED 4:20 – 5:30  D302

**WCN-2 Wireless Communications and Networking**  
**Session Chair:** Wei Wang, South Dakota State University, USA  

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<tr>
<td>A Dynamic Frame Slotted ALOHA Anti-Collision Algorithm for the Internet of Things</td>
<td>Rafael Ferraz Barbosa Mota and Daniel M. Batista</td>
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<td>GB-MAC: A Backbone based Low Latency Protocol for WSNs</td>
<td>Tales Heimfarth, João Carlos Giacomini, Alexandre Victor Fassio, and João Paulo de Araujo</td>
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<tr>
<td>A Biometric-Based Authenticated Key Agreement Scheme using ECC for Wireless Sensor Networks</td>
<td>Eun-Jun Yoon and Kee-Young Yoo</td>
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</tbody>
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### WED 4:20 – 5:30  D304

**EENC – Energy Efficient Nested Clustering in UASN**  
Syed Hassan Ahmed, Abdul Wahid, and Dongkyun Kim  

### WED 4:20 – 5:30  D303

**SONAMA-1 Social Network and Media Analysis**  
**Session Chair:** Carlos Kamieniak, Federal University of ABC, Brazil  

<table>
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<th>Title</th>
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<tr>
<td>Multi-Agent Simulation of Perception of Safety from Crime</td>
<td>J. Octavio Gutierrez-Garcia and Andrés Gómez de Silva Garza</td>
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<td>Rococo: Robust Communal Publication Scheme</td>
<td>Thomas Largillier, Guillaume Peyronnet, and Sylvain Peyronnet</td>
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<td>“Sorry, I was hacked” – A Classification of Compromised Twitter Accounts</td>
<td>Eva Zangerle and Günther Specht</td>
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<td>Reachability Vectors: Features for Link-Based Similarity Measures</td>
<td>Seok-Ho Yoon, Ji-Soo Kim, Jiwoon Ha, Sang-Wook Kim, Minsoo Ryu, and Ho-Jin Choi</td>
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### WED 4:20 – 5:30  D408

**SOAP Service-Oriented Architecture and Programming**  
**Session Chair:** Mario Bravetti, University of Bologna, Italy  

<table>
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<td>A Method to Identify Services using Master Data and Artifact-Centric Modeling Approach</td>
<td>Rosane S. Huergo, Paulo F. Pires, and Flavia C. Delicato</td>
</tr>
<tr>
<td>An SOA Approach for Automating Software Product Line Adoption</td>
<td>Carlos Parra, Diego Joya, Leonardo Giral, and Alvaro Infante</td>
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<td>In the Wild: A Large Scale Study of Web Service Vulnerabilities</td>
<td>Sushama Karumanchi and Anna Cunzia Squicciarini</td>
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<td>Quantitative Analysis of Rec-Based Services Coordination</td>
<td>Nuno Oliveira, Alexandra Silva, and Luis S. Barbosa</td>
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### WED 4:20 – 5:30  D301

**PSC Programming for Separation of Concerns**  
**Session Chair:** Prof. Walter Cazzola, University of Milano, Italy  

<table>
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<tr>
<td>An Aspect Pointcut for Parallelizable Loops</td>
<td>John S. Dean and Frank J. Mitropoulos</td>
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<td>Declarative Design Pattern-Based Development using Aspect Oriented Programming</td>
<td>Mario L. Bernardi, Marta Cimitile, and Giuseppe A. Di Lucca</td>
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Thursday March 27, 2014

THU 9:00 – 10:40 D001
Keynote Address
Professor Sang Hyuk Son
See page 7 for details.

THU 10:40 – 11:10
Coffee Break
2ND FLOOR LOBBY

THU 9:40 – 12:50
Poster Session I
2ND & 3RD FLOOR LOBBY

THU 11:10 – 12:50 D303
(SONAMA-2) Social Network and Media Analysis
Session Chair: Andres Gomez De Silva Garza, Instituto Tecnologico Autonomo de Mexico, Mexico

What makes your Opinion Popular? Predicting the Popularity of Micro-Reviews in Foursquare
Marisa Vasconcelos, Jusaara Almeida, and Marcos Goncalves

Exploring the Significance of Human Mobility Patterns in Social Link Prediction
Basma Alharbi and Xiangliang Zhang

An Approximate Framework for Scaling Social Influence Computation in Large Networks
Yue-Chung Pan and Huan Chen

Information Diffusion in OSNs: The Impact of Nodes’ Sociality
Valerio Arnaboldi, Marco Conti, Massimiliano La Gala, Andrea Passarella, and Fabio Pezzoni

THU 11:10 – 12:50 D408
(SVT-1) Software Verification and Testing
Session Chair: Michail Papadakis, University of Luxembourg, Luxembourg

Crashmaker: An Improved Binary Concolic Testing Tool for Vulnerability Detection
Bing Chen, Qingkai Zeng, and Weiguang Wang

Translating Event-B to JML-Specified Java Programs
Victor Rivera and Nestor Cataño

Input-Output Conformance Testing based on Featured Transition Systems
Harsh Beohar and Mohammad Reza Mousavi

Runtime Enforcement of Regular Timed Properties
Srinivas Pinnisetty, Ylias Falonne, Thierry-Jeron, and Hervé Marchand

THU 11:10 – 12:50 D302
(IILE) Intelligent and Interactive Learning Environments
Session Chair: Seiji Isotani, University of São Paulo, Brazil

A Systematic Mapping on Gamification Applied to Education
Simone de Sousa Borges, Vinicius H.S. Durelli, Helena Macedo Reis, and Seiji Isotani

Statistical Methods in the Evaluation of Sensory-Motor Skills Acquisition in 3D Interactive Virtual Environments
Alexandre M. dos Anjos, Romero Tori, Anderson Castro Soares de Oliveira, and Fátima L.S. Nunes

Lessons Learned from an Online Open Course: A Brazilian Case Study
Ranilson Paiva, Daniel Borges, Jário Santos, Ig Ibert Bittencourt, and Alan Pedro da Silva

A Dynamic Bayesian Network for Inference of Learners’ Algebraic Knowledge
Henrique M. Seffrin, Geisane L. Ruih, and Patricia A. Jaques

THU 11:10 – 12:50 D301
(EMBS) Embedded Systems
Session Chair: Li-Pin Chang, National Chiao-Tung University, Taiwan

A Thermal-Throttling Server in 3D Multicore Chips
Ting Hao Tsai and Ya-Shu Chen

A Heuristic to Minimize the Cardinality of a Real-Time Task Set by Automated Task Clustering
Antoine Bertout, Julien Forget, and Richard Olejnik

A Traffic-Balanced Routing Scheme for Heat Balance in 3D Networks-on-Chip
Wan-Chi Chang, Hsueh-Wen Tseng, and Chin-Fu Kuo
**Building a WSN Infrastructure with COTS Components for the Thermal Monitoring of Datacenters**
Gustavo Zanatta, Giulio Dariano Bottari, Raphael Guerra, and Julius Leite

**The Least-Dirty-First Cache Replacement Policy for Phase-Change Memory**
Seunghoon Yoo, Eunjin Lee, and Hyokyung Bahn

**The Importance of Geographic Locality for Online Information Diffusion**
Rodrigo Marotti Togneri, Bruno Tadeu Caetano, and Carlos Alberto Kaminiski

**Pathways for Irony Detection In Tweets**
Larissa A. de Freitas, Aline A. Vanin, Denise N. Hogetop, Marco N. Bochernitsan, and Renata Vieira

**A Structural Analysis of Literary Fictions with Social Network Framework**
Jong-Kyu Seo, Sung Hwan Kim, Hae-Sung Tak, and Hwan-Gue Cho

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**THU 12:50 – 2:00**
**Lunch Break**
**BaeSangggwan Hall**

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**THU 2:00 – 3:30**
**D302**

**(BHD) BioHealth Informatics**
*Session Chair:* Sanghyun Park, Korea Advanced Institute of Science and Technology, Korea

- **Parameter Estimation and Simulation for One-Choice Ratcliff Diffusion Model**
  Amiya Patanaik, Vitali Zagarodnov, and C.K. Kwok

- **Improved Heart Rate Detection using Smart Phone**
  Arpan Pal, Aishwarya Visvanathan, Anuradha Choudhury, and Anirudha Sinha

- **Secure Monitoring for Dementia Patients**
  Udaya Tupakula and Vijay Varadarajan

- **Bespoke Video Games to Provide Early Response Markers to Identify the Optimal Strategies for Maximizing Rehabilitation**
  S. Graziodio, R. Davison, K. Shahabi, K.M.A. Sahota, G. Ushaw, G. Morgan, and J.A. Eyre

- **A Model-Based Architecture for Testing Medical Cyber-Physical Systems**
  Lenardo C. Silva, Mirko Perkusich, Frederico M. Bublitz, Hyggo O. Almeida, and Angelo Perkusich

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**THU 2:00 – 3:30**
**D303**

**(SONAMA-3) Social Network and Media Analysis**
*Session Chair:* Eva Zangerle, University of Innsbruck, Austria

- **The Importance of Geographic Locality for Online Information Diffusion**
  Rodrigo Marotti Togneri, Bruno Tadeu Caetano, and Carlos Alberto Kaminiski

- **Pathways for Irony Detection In Tweets**
  Larissa A. de Freitas, Aline A. Vanin, Denise N. Hogetop, Marco N. Bochernitsan, and Renata Vieira

- **A Structural Analysis of Literary Fictions with Social Network Framework**
  Jong-Kyu Seo, Sung Hwan Kim, Hae-Sung Tak, and Hwan-Gue Cho

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**THU 2:00 – 3:30**
**D301**

**(EE-1) Enterprise Engineering**
*Session Chair:* Rafael Accorsi, Freiburg University, Germany

- **How Social Distance of Process Designers Affects the Process of Process Modeling: Insights from a Controlled Experiment**
  Jens Kolb, Michael Zimoch, Barbara Weber, and Manfred Reichert

- **Execution Support for Agenda-Driven Case Management**
  Marian Benner-Wickner, Matthias Book, Tobias Brückmann, and Volker Gruhn

- **Predicting Change Propagation Impacts in Collaborative Business Processes**
  Walid Fdhila and Stefanie Rinderle-Ma

- **Towards an Assessment Model for Balancing Process Model Production and Use**
  Toomas Saarinen and Marlon Dumas

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**THU 2:00 – 3:30**
**D408**

**(SVT-2) Software Verification and Testing**
*Session Chair:* Mohammad Reza Mosavii, Halmstad University, Sweden

- **On the Completeness of Test Suites**
  Adilson Luiz Bonifacio and Arnaldo Vieira Moura

- **Effective Fault Localization via Mutation Analysis: A Selective Mutation Approach**
  Mike Papadakis and Yves Le Traon

- **A Systematic Literature Review on Modified Condition and Decision Coverage**
  Tanay Kanti Paul and Man Fai Lau

- **Complexity Checking of ARM Programs, by Deduction**
  Mário Pereira and Simião Melo de Sousa

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**THU 2:00 – 3:30**
**D407**

**Korea IT Original Technology and Applied Computing Special Debate II**

- **Korea IT Original Technology and Applied Computing Special Debate II**
  Sunghwan Lee, Korea University, Korea (Review Board Member, NRF)
  Chagho Seo, Gungju University, Korea (Review Board Member, NRF)
  Sung Y. Shin, Sung Y. Shin, South Dakota State University, ACM SigAPP Chair
  Roger L. Wainwright, Tulsa University, USA
  Tei-Wei Kuo, National Taiwan University, ACM SigAPP Treasurer

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**THU 2:40 – 5:40**
**D407**

**Korea IT Original Technology and Applied Computing Special Debate II**

- **Korea IT Original Technology and Applied Computing Special Debate II**
  Sunghwan Lee, Korea University, Korea (Review Board Member, NRF)
  Chagho Seo, Gungju University, Korea (Review Board Member, NRF)
  Sung Y. Shin, South Dakota State University, ACM SigAPP Chair
  Roger L. Wainwright, Tulsa University, USA
  Tei-Wei Kuo, National Taiwan University, ACM SigAPP Treasurer
Thu 2:30 – 5:00
Poster Session II
2ND & 3RD FLOOR LOBBY
Posters of the following Tracks:
ACI2, CIVIA, CM, CSP, EE, HCI, IAR, MCA, MMV, OS, PL, RE, SATTA, SE, SEGC, TRECK
(See page 21 for detailed list of Posters)

Thu 3:30 – 4:00
Coffee Break
2ND FLOOR LOBBY

Thu 4:00 – 5:30
D302
(CIVIA) Computational Intelligence and Video & Image Analysis
Session Chair: Soon Ki Jung, Kyungpook National University, Korea
Feature Description based on Center-Symmetric Local Mapped Patterns
Carolina Toledo Ferraz, Osmond Pereira, and Adilson Gonzaga
Faster Seam Carving with Minimum Energy Windows
César L. Bhum Silveira, Luiz Gonzaga, Kleinner Farías, Fabio de Oliveira Mierlo, Cristiano André da Costa, and Rodrigo da Rosa Righi
Representing Local Binary Descriptors with BossaNova for Visual Recognition
Carlos Caetano, Sandra Avila, Silvio Guimarães, and Arnaldo de A. Araújo

Thu 4:00 – 5:30
D303
(COSYS) Cooperative Systems
Session Chair: Rachid Anane, Coventry University, UK
Impact Analysis for Event-Based Systems using Change Patterns
Simon Tragatschinp, Huy Tran, and Uwe Zdun
Secure Positioning in a UAV Swarm using On-Board Stereo Cameras
Roberto Sadao Yokoyama, Bruno Yuji Lino Kimura, and Edson dos Santos Moreira

Thu 4:00 – 5:30
D408
(CM) Coordination Models, Languages and Applications
Session Chair: Jose Luis Fernandez Marquez, University of Geneva, Switzerland
Reliable Self-Deployment of Cloud Applications
Xavier Etchevers, Gwen Salain, Fabienne Boyer, Thaerry Coupaye, and Noël De Palma
Declarative Scheduling for Active Objects
Ludovic Henriot and Justine Rochas
Practical Implementation Techniques of Ambient Calculus in Conventional Dynamic Languages
Seiji Umatani

Thu 4:00 – 5:30
D301
(EE-2) Enterprise Engineering
Session Chair: Minseok Song, Ulsan National Institute of Science and Technology, Korea
A Collaborative Processes Synchronization Method with Regards to System Crashes and Network Failures
Lei Wang, Andreas Wombacher, Luís Ferreira Pires, Marten J. van Sinderen, and Chi-Hung Chi
Modeling of Privacy-Aware Business Processes in BPMN to Protect Personal Data
Wadhia Labda, Nikolay Mehander, and Pedro Sampaio
Conformance Checking for BPMN-Based Process Models
Thomas Molka, David Redlich, Marc Drobek, Artur Caetano, Xiao-Jun Zeng, and Wasif Gilani

Friday March 28, 2014

Fri 10:00 – 11:40
D302
(SEC-1) Computer Security
Session Chair: Manuel Bernardino Barbosa, INESC TEC & University of Minho, Portugal
Building Secure and Anonymous Communication Channel: Formal Model and Its Prototype Implementation
Keita Emura, Akira Kanaoka, Satoshi Ohta, and Takeshi Takahashi
Do You Feel Lucky? A Large-Scale Analysis of Risk-Rewards Trade-Offs in Cyber Security
Yan Shoshitaishvili, Luca Invernizzi, Adam Doupe, and Giovanni Vigna
Extracting Probable Command and Control Signatures for Detecting Botnets
Ali Zand, Giovanni Vigna, Xifeng Yan, and Christopher Kruegel
Ianus: Secure and Holistic Coexistence with Kernel Extensions – A Immune System-Inspired Approach
Daniela Oliveira, Jesus Navarro, Nicholas Wetzel, and Max Bucci
A Hybrid GA-ANN Approach for Autonomous Robots Topological Navigation
Valéria de Carvalho Santos, Daniel Oliva Sales, Cláudio Fabiano Motta Toledo, and Fernando Santos Osório

XIS-Mobile: A DSL for Mobile Applications
Andre Ribeiro and Alberto Rodrigues da Silva

A Process for Facilitating Interaction Design through Automated GUI Generation
David Ranerburer, Hermann Kaindl, Roman Popp, Vedran Sajatović, and Alexander Armbruster
Hiding user Content Interest while Preserving P2P Performance
Riccardo Petrocco, Mihai Capotă, Johan Pouwelse, and Dick H.J. Epema

FRI 12:10 – 1:50   D408
(HC) Heterogeneous Computing
Session Chair: Donghoon Yoo, Samsung Electronics, Korea

GPU-Aware Distributed Quantum Simulation
Anderson Avila, Adriano Maron, Renata Reiser, Mauricio Pilla, and Adenauer Yamin

Efficient Dynamic Scheduling of Heterogeneous Applications in Hybrid Architectures
Guilherme Andrade, Gabriel Ramos, Daniel Madeira, Rafael Sachetto, Esteban Chu, Renato Ferreira, and Leonardo Rocha

Creating Heterogeneity at Run Time by Dynamic Cache and Bandwidth Partitioning Schemes
Aryabartta Sahu and Saraprapu Ramakrishna

On the Support of Task-Parallel Algorithmic Skeletons for Multi-GPU Computing
Fernando Alexandre, Ricardo Marques, and Hervé Paulino

The Future of Accelerator Programming: Abstraction, Performance or Can We Have Both?
Kamil Rocki, Martin Burtlescher, and Reoji Suda

FRI 12:10 – 1:50   D301
(SATTA) Software Architecture: Theory, Technology, and Applications
Session Chair: Sungwon Kang, Korea Advanced Institute of Science and Technology, Korea

Generative Adaptation of Model Transformation Assets: Experiences, Lessons and Drawbacks
Fábio Paulo Basso, Raquel Mainardi Pillat, Toacy Cavalcante Oliveira, and Marcos Didonet Del Fabbro

A Hierarchical Model for Traceability between Requirements and Architecture
Jeho Oh and Sungwon Kang

On the Impact of Obliviousness and Quantification on Model Composition Effort
Everton Guimaraes, Alessandro Garcia, and Kleimer Farias

Research Challenges in Business Process Adaptability
Riccardo Cognini, Flavio Corradini, Stefania Gnesi, Andrea Polini, and Barbara Re

POSTERS LISTING

THU 9:40 - 12:50
Poster Session I
2nd & 3rd Floor Lobby

(AC11) Advanced and Convergent IT
Encountering Smartphones in Network Simulation: A Preliminary Result on Multi-Radio Multicast
Yongwoon Park and Wonyong Yoon

Modeling for Context-Aware Healthcare Service using Ontology
Junho Choi, Jeongin Kim, and Pankoo Kim

A Novel Double Linear–Cubic Convolution Interpolation for Digital Image Scaling
Hae-Min Moon, Kyeong-Ib Ko, JuHyun Shin, and Sung Bum Pan

Method for Fast Clustering of Data Distributed on a Sphere Surface
Tran Tin and Sung-Ryul Kim

Performance Analysis of the Golden-SM in the V2V Network
Myung Chul Park and Dong Seog Han

Matrix Correlation Distance for 2D Image Classification
Hyunsook Choi, Jeongin Seo, and HyeYoung Park

A New Device Discovery Scheme in Lighting Control Networks
Sang-I Choi, Seok-Joo Koh, Insu Kim, Sang-Ryu Lim, and Tae-Gyu Kang

Impacts of Delayed Replication on the Key-Value Store
Minwoo Jang, Woochur Kim, Yookun Cho, and Jiman Hong

(BHI) BioHealth Informatics Track
Similar MRI Object Retrieval based on Modified Contour to Centroid Triangulation with Arc Difference Rate
Byung K. Jung, Sung Y. Shin, Wei Wang, Hyung D. Choi, and Jeong K. Park

Design and Implementation of a Personal Health Monitoring System with an Effective SVM-Based PVC Detection Algorithm in Cardiology
Huan Chen, Guo-Tan Liu, Yue Chuang Fan, Bo-Chao Cheng, Cheng-Min Chen, and Ting-Chun Kuo

A Low Cost Digital Operating Room

(CC) Cloud Computing Track
Experimenting on Virtual Machines Co-Residency in the Cloud: A Comparative Study of Available Test Beds
Abdulaziz Alabdulhafez and Paul Ehilchelvan

Towards Better Manageability of Database Clusters on Cloud Computing Platforms
Miguel G. Xavier, Israel C. De Oliveira, Robson D. Dos Passos, and Cesar A.F. De Rose

(COSYS) Cooperative Systems Track
Redesigning Transaction Load Balancing on Electronic Funds Transfer Scenarios
Rodrigo da Rosa Righi, Cristiano André da Costa, Luis Gonzaga Jr., Kleimer Farias, Alexandre Luis Andrade, and Lucas Graebin

Towards a Learning Design Authoring Tool that Generates Personalized Units of Learning for CSCL
Geiser Chalco Chalco and Seiji Isotani
Choosing my Partners based on How They will Evaluate my Behavior
Elane Cristina da Rocha Cardoso Saraiva and Viviane Torres da Silva

(DADS) Dependable and Adaptive Distributed Systems Track
Hierarchical Topology Adaptation for Distributed Convergecast Applications
Sandip Chakrabarty, Suchetana Chakraberty, Sushanta Karmakar, and Hridoy Sankar Dutta
An Energy-Aware Service Composition Framework for Service-Oriented Wireless Sensor Networks
Tao Wang, Ke Zhang, and Liangjun Cheng

(DM) Data Mining Track
The Discovery of user Related Rare Sequential Patterns of Topics in the Internet Document Stream
Zhongyi Hu, Hongan Wang, and Jiaqi Zhu

(DTTA) Database Theory, Technology and Applications Track
Speaking in Tongues: SQL Access to NoSQL Systems
Julian Rith, Philipp S. Lehmayr, and Klaus Meyer-Wegener
A Test Framework for Large Scale Declarative Queries: Preliminary Results
Amin Mesmoudi and Mohand-Said Hacid

(EC) Applications of Evolutionary Computing Track
Mirrored Orthogonal Sampling with Pairwise Selection in Evolution Strategies
Hao Wang, Michael Emmerich, and Thomas Bäck
Towards Automated Malware Creation: Code Generation and Code Integration
Andrea Cani, Marco Gaudesi, Ernesto Sanchez, Giovanni Squillero, and Alberto Tonda

(IILE) Intelligent and Interactive Learning Environments Track
Towards a Framework for Relevant Guidance
Elaine H.T. Oliveira, Erikka H. Nozawa, and Rosa M. Vicari
WAVE: An Architecture for Predicting Dropout in Undergraduate Courses using EDM
Laci Mary Barbosa Manhães, Sergio Manuel Serr da Cruz, and Geraldo Zimbria

(IIF) Intelligent Information Fusion Track
Smell Classification using Weakly Responding Data
Sigeru Omatsu and Mitsuaki Yano

(MP) Mobile Platforms
Traffic 411: A Traffic Congestion Routing and Awareness Platform for Nairobi
Andrew Kinai, Reginald E. Bryant, Aisha Walcott-Bryant, Eric Mibua, Komminist Weldemariam, and Osamuyimen Stewart

(NET) Networking Track
A Low-Latency Service Composition Approach in Mobile Ad Hoc Networks
Chenyang Liu, Jian Cao, and Frédéric Le Mouel

(RS) Recommender Systems: Theory and Applications Track
PrefRank: Fair Aggregation of Subjective user Preferences
Anirban Basu, Juan Camilo Corena, Shinsaku Kiyomoto, Jaideep Vaidya, Stephen Marsh, and Yutaka Miyake
A Recommendation Approach for Digital TV Systems based on Multimodal Features
Recolutions Rilim, Felipe Barbosa, Alexandre Costa, Giovanni Calheiros, Hyggø Almeida, Angelo Perkusich, and Aldenor Martins

(SGST) Smart Grid and Smart Technologies Track
Cyber-Secure Communication Architecture for Active Power Distribution Networks
Teklemariam Tsegay Tesfay, Jean-Pierre Hubaux, Jean-Yves Le Boudec, and Philippe Oechslin
Energy Disaggregation meets Heating Control
Stephan Spiegel and Sahin Albayrak
Monitoring Water Scarcity Risk in Africa
Kala Fleming, Komminist Weldemariam, Haggai Wangusi, and Osamuyimen Stewart

(SONAMA) Social Network and Media Analysis Track
Automatic Categorization of Questions from Q&A Sites
Eduardo Cunha Campos and Marcelo de Almeida Maia
A Hybrid Algorithm for Recommendation to Twitter Peers
James N.K. Liu, Zongnong Meng, Yanxue Hu, Yulin He, Simon C.K. Shiu, and Vincent W.S. Cho
Preventing the Diffusion of Negative Information based on Local Influence Tree
Li Yang, Sha Ying, Shan Jixi, Jiang Bo, and Wu Jianjun
Spectral Analysis and Text Processing Over the Computer Science Literature: Patterns and Discoveries
Rosa V.E. Quille, Caetano Truina Jr., and Jose F. Rodrigues Jr.
The Strength of Social Strength: An Evaluation Study of Algorithmic versus User-Defined Ranking
Juwel Rana, Johan Kristiansson, and Kåre Synnes

(SWA) The Semantic Web and Applications Track
Analyzing Network Privacy Preserving Methods: A Perspective of Social Network Characteristics
Duck Ho Bae, Jong-Min Lee, Sang-Wook Kim, Young soon Won, and Yongsu Park
Utilizing Domain-Specific Keywords for Discovering Public SPARQL Endpoints: A Life-Sciences Use-Case
Muntazir Mehdi, Aftab Iqbal, Ali Hasnain, Yasar Khan, Stefan Decker, and Ratnesh Sahay

(WCN) Wireless Communications and Networking
DDoS Attack Detection by using Packet Sampling and Flow Features
Jae-Hyun Jun, Cheol-Woong Ahn, and Sung-Ho Kim
**Final Program**

**Page 21**

**SAC 2014, March 24 – 28,**

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### (WT) Web Technologies Track

**Cross-Platform Mobile Development: A Study on Apps with Animations**
Matteo Ciman, Ombretta Gaggi, and Nicola Gonzalez

**OSBS: Online Storm Water Billing System**
Woock Sung Yoo

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### Thu 2:30 - 5:00

**Poster Session II**

**2nd & 3rd Floor Lobby**

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### (ACI2) Advanced and Convergent IT

**Analysis of Binary Code Topology for Dynamic Analysis**
Byeongho Kang and Eun Gyu Im

**A Kernel-Based Monitoring Approach for Analyzing Malicious Behavior on Android**
Youn-sik Jeong, Hwan-jae Lee, Seong-jae Cho, Sangchul Han, and Minkyu Park

**An Optimal Device Selection for User Satisfaction of Content Sharing**
Jaime Tang, Paul Kim, and Sangwook Kim

**A CUDA-Based Implementation of OpenGL-Compatible Rasterization Library Prototype**
Young Chun Kwon and Nakhoon Back

**Design of a Cellular Automata Cell with Rule 30 on Quantum-Dot Cellular Automata**

**Respiratory Motion Estimation using Visual Coded Markers for Radiotherapy**
Udaya Wijenayake and Soon Yong Park

**The Effect of IMPORT Change in Software Change History**
Jungil Kim and Kunjoo Lee

**Virtual Prototype Generation by Shockwave Flash for Simulating HW Components of Embedded System**
Soo Young Jang, Ajay Kumar Jha, and Woo Jin Lee

**(CIVIA) Computational Intelligence Video & Image Analysis Track**

**Face Recognition based on Global and Local Features**
Cleber Zanchettin

**Two Level Reversible Data Hiding in 2D Images**
N. Ramalingeswara Swamy, Saiful Islam, and Phalguni Gupta

**Anthropometric and Human Gait Identification using Skeleton Data from Kinect Sensor**
Virginia Andersson, Rafael Dutra, and Ricardo Araujo

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### (CM) Coordination Models, Languages and Applications Track

**Flexible Modeling of Policy-Driven Upstream Notification Strategies**
Eva Kühn, Stefan Crafit, Gerson Juszkowitz, and Martin Novak

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### Self-Composition of Services with Chemical Reactions

Francesco De Angelis, Jose Luis Fernandez-Marquez, and Giovanna Di Marzo Serugendo

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### (CSP) Constraint Solving and Programming Track

**An Enhanced Features Extractor for a Portfolio of Constraint Solvers**
Roberto Amadini, Maurizio Gabbielli, and Jacopo Mauro

**Flexible Cooperation in Parallel Local Search**
Danny Munera, Daniel Diaz, Salvador Abreu, and Philippe Codognet

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### (EE) Enterprise Engineering Track

**Big Data meets Process Mining: Implementing the Alpha Algorithm with Map-Reduce**
Joerg Evermann and Ghazal Assadi

**eXtreme Enterprise Architecture Planning**
Hugo Ramos and Andre Vasoncelos

**Ontology-Based Enterprise Architecture Model Analysis**
Gonçalo Antunes, Marzieh Bakshahdeh, Rudolf Mayer, José Borbinha, and Artur Caetano

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### (HCl) Smart Human Computer Interaction Track

**A User Study on Tailoring GUIs for Smartphones**
David Alonso-Rios, David Raneburger, Roman Popp, Hermann Kaindl, and Jürgen Falb

**Method for Visualizing Undone Operations based on Changes on Desktop Screen**
Arisa Sakamoto, Takuya Katayama, Tatsunori Terada, and Masahiko Tsukamoto

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### (IAR) Information Access and Retrieval Track

**Probabilistic Opinion Models based on Subjective Sources**
Faiza Belbachir, Mohand Boughanem, and Malik M. Saad MISSen

**Improved Named Entity Recognition – Patterns in Columns Model (PCM)**
Chun Yong Moon, Manjula Pilaka, Hye-young Paik, and John Shepherd

**Exploring Query Reformulation for Named Entity Expansion in Information Retrieval**
Bissan Audeh, Philippe Beaune, and Michel Beigbeder

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### (MCA) Mobile Computing and Applications Track

**Integrating IEEE 11073 and Constrained Application Protocol for Personal Health Devices**
Danilo P.S. Santos, Frederico M. Rubblitz, Hyggoy O. Almeida, and Angelo Perkusich

**Smartphone based Multimodal Activity Detection System using Plantar Pressure Sensors**
Ferdaus Ahmed Kawsar, Sheikh Iqbal Ahamed, and Richard Love

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### (MMV) Multimedia and Visualization Track

**An Approach to Support Stereoscopic 3D Web**
Qinhui Chen, Wemmin Wang, Ronggang Wang, Jianlong Zhang, and Zhongxin Liu

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**Introduction of a Multi-Layer Predictive Search Strategy for Scalable Video Coding**
Ronald Husemann and Walter Roesler
OS Operating Systems Track
Per-Cluster Allocation of Relocation Staff on Electric Vehicle Sharing Systems
Junghoon Lee, Gyung-Leen Park, Jihyun Kang, and Naram Ham
Mapping of the Synchronization Mechanisms of the Linux Kernel to the Response-Time Analysis Model
Daniel Bristot de Oliveira and Romulo Silva de Oliveira
Experimental and Theoretical Analyses of Memory Allocation Algorithms
Diego Elias, Rivalino Matias, Marcia Fernandes, and Lucio Borges
Large Scale Processing of Landsat Data on Various Software Platforms
George Hamer and Jason Werpy

PL Programming Languages Track
Global Value Numbering for Redundancy Detection: A Simple and Efficient Algorithm
Nahzath Saleena and Vinodh Pulver
Manipulating Models using Internal Domain-Specific Languages
Filip Křikava, Philippe Collet, and Robert B. France
Linter – A Tool for Finding Bugs and Potential Problems in Scala Code
Matic Potezni, Uros Čibej, and Boštjan Slivnik

RE Requirements Engineering Track
Quality of Requirements Specifications: A Preliminary Overview of an Automatic Validation Approach
Alberto Rodrigues da Silva
Transformation Approach from KAOS Goal Models to BPMN Models using Refinement Patterns
Hiroki Horita, Kono Honda, Yutichi Sei, Hiroypuki Nakagowa, Yasuyuki Tahara, and Akihiko Ohsuga

SATTA Software Architecture: Theory, Technology, and Applications Track
Ontology Driven Builder Pattern – A Plug and Play Component
Anritsa Chaturvedi and Prabhakar T.V.

SE Software Engineering Track
Dynamics of Open-Source Software Developer’s Commit Behavior: An Empirical Investigation of Subversion
Yutao Ma, Yang Wu, and Youwei Xu
Rethinking Agribusinesses in Africa
Charity Wayua, Komminist Woldemariam, and Osamuyimen Stewart
A Dynamic Analysis Technique to Extract Symptoms that Suggest Side Effects in Framework Applications
Izuru Kume, Naoya Nitta, Masahide Nakamura, and Etsuya Shibayama
Combining Research and Education of Software Testing: A Preliminary Study
Zhenyu Chen, Atif Memon, and Bin Luo
Towards a Quality Model for Model Composition Effort
Kleinner Farias, Alessandro Garcia, Carlos Lucena, Luiz Gonzaga Jr., Cristiano André da Costa, Rodrigo da Rosa Righi, Fábio Basso, and Toacy Oliveira

Build System Analysis with Link Prediction
Xin Xia, David Lo, Xinyu Wang, and Bo Zhou
An Empirical Study of Bugs in Build Process
Xiaoqing Zhao, Xin Xia, Pavneet Singh Kochhar, David Lo, and Shanping Li
A Survey on Research in Software Reliability Engineering in the Last Decade
Joicymara Xavier, Autran Macedo, Rivalino Matias, and Lucio Borges

SGEC Software Engineering Aspects of Green Computing Track
Green-as-a-Service (GaaS) for Cloud Service Provision Operation
Mahamat Issa Hassan and Rami Bahsoon

TRECK Trust, Reputation, Evidence and other Collaboration Know-How Track
Learning Reputation in an Authorship Network
Charanpal Dhanjal and Stephan Clemençon

Student Research Competition Program
Student Research Abstract: A Privacy-Preserving Profile Matching based Authentication System for Mobile Health Networks
Smart Human Computer Interaction (HCI) Track
David Hundely Abraham Davidraj

Student Research Abstract: A Real-Time Smartphone and Smartshoe-Based Fall Prevention System
Mobile Computing and Applications (MCA) Track
A.K.M. Jahangir Alam Majumder

Student Research Abstract: A Domain Specific Language for Process Scheduling
Operating Systems (OS) Track
Daniel Röhrl

Student Research Abstract: A Platform Independent Scheduler Framework
Operating Systems (OS) Track
Christian René Sechting

Recommender Systems: Theory and Applications (RS) Track
Yong Zheng

Student Research Abstract: Android Malware Detection based on kullback-Leibler Divergence
Computer Security (SEC) Track
Vanessa N. Cooper

Student Research Abstract: Interpreting Energy Profiles with CEGAR
Software Engineering Aspects of Green Computing (SEGC) Track
Steven te Brinke
Student Research Abstract: Demand Behavior Analysis and Coordination Scheduling for Energy Saving in Smart Building
Smart Grid and Smart Technologies (SGST) Track
Siyun Chen

Student Research Abstract: A Fault-Tolerant Architecture for Decentralized Compositions of Services in the Wild
Service-Oriented Architecture and Programming (SOAP) Track
Felipe Pontes Guimaraes

Student Research Abstract: Mechanisms to Ensure Quality of Service for the Internet of Things
Wireless Communications and Networking (WCN) Track
Rafael Perazzo Barbosa Mota

Student Research Abstract: Vehicle to Vehicle Communication using Zigbee Protocol
Wireless Communications and Networking (WCN) Track
Alfred Daniel

Student Research Abstract: An Optimized Handover Scheme based on Media Independent Handover Standard IEEE 802.21
Wireless Communications and Networking (WCN) Track
Murad Khan

Welcome Reception
March 25, 2014
Tuesday at 7:30PM
Art Museum, Hilton Gyeongju, 370, Sinpyeong-dong, Gyeongju-si, Gyeongsangbuk-do

Banquet
Mar. 27, 2014
Thursday at 7:30PM
Grand Ballroom, Hilton Gyeongju, 370, Sinpyeong-dong, Gyeongju-si, Gyeongsangbuk-do

SAC 2015 INVITATION
SAC 2015 will be held in Salamanca, Spain, A UNESCO Declared World Heritage City in March, 2015.
It is hosted by University of Salamanca. Please check the registration desk for handouts and a poster or visit SAC 2015 website at http://www.acm.org/conferences/sac/sac2015/

Future SAC Organization Meeting

※Gyeongju Choe Family Academy
Gyeongju Choe Family has succeeded to 12 generations for 400 years with wealth and honor, showing the example of the Korean capitalism by coexisting with local community. Though there have been a lot of the rich through East and West, Gyeongju Choe Family is a rare case which has been respected for a long time and unchangeably by the local community. Gyeongju Choe Family's true wealth spirit which has come true of noblesse oblige is being respected as the spirit of 21C. Through the creative succession to a Choe's wealth spirit, Gyeongju City is running Gyeongju Choe Family Academy to contribute to the development of the local community and Korea.

Venue
Conference Venue
Centennial Memorial Hall
Dongguk University, Gyeongju

Luncheon
Baeksanggwan Hall
Dongguk University, Gyeongju

Venue