

27th International Conference on
Computers and Their Applications
(CATA-2012)

PROGRAM

March 12-14, 2012

Imperial Palace Hotel
Las Vegas, Nevada USA

Sponsored by



International Society for
Computers and Their Applications

975 Walnut Street, Suite 132
Cary, NC 27511-4216

Phone: (919) 467-5559; Fax: (919) 467-3430; E-mail: isca@ipass.net

27th International Conference on Computers and Their Applications (CATA-2012)

SPONSOR

International Society for Computers and Their Applications (ISCA)

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Iowa State University

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Sahra Sedigh
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MONDAY, MARCH 12, 2012

All meeting rooms are located on the 4th Floor.

**7:30 a.m. – 5:00 p.m. CONFERENCE REGISTRATION - FUJI FOYER
Coffee/pastries**

**8:30 a.m. – 8:45 a.m. WELCOME and Opening Remarks (FUJI Room)
Dr. Les Miller, Iowa State U. (Conference Chair)
Dr. Sahra Sedigh, Missouri U. of Sci. and Tech. (Program Chair)**

9:00 a.m. – 10:00 a.m. - KEYNOTE ADDRESS

R. Lal Tummala

**Chair and Professor, Department of Electrical and Computer Engineering
San Diego State University**

**“COMPUTING IN NON-TRADITIONAL DISCIPLINES:
A HISTORICAL PERSPECTIVE”**

Location: SAMPAN Room

10:00 a.m. – 10:30 a.m. COFFEE BREAK

SESSION 1A:

INTELLIGENT SYSTEMS AND KNOWLEDGE DISCOVERY - 1

Monday, March 12, 10:30 a.m. – 12:00 p.m. (SAMPAN A Room)

Session Chair: Dr. Gordon K. Lee, San Diego State University

- 1. An Affordable Housing Energy Management System Based upon ANFIS Prediction**
Jennifer Sindelir and Gordon K. Lee (San Diego State University, USA)
- 2. Relational Association Rule Mining in Market Basket using the RoloDex Model with P-Tree**
Arijit Chatterjee, Mohammad Hossain, Arjun G. Roy, and William Perrizo
(North Dakota State University, USA)
- 3. Retrieving Information by Clustering Related Events using Vector Space**
Kanwalinderjit K. Gagneja and Kendall E. Nygard (North Dakota State University, USA)
- 4. NeuroCog: An Adaptive Topological Map Learning and Reactive System for Maze Navigation**
Luciene de O. Marin, Melisa F. Fagundes, Edson R. De Pieri, Mauro Roisenberg
and Patricia D. M. Plentz (Federal University of Santa Catarina, Brazil)

SESSION 1B:**SOFTWARE ENGINEERING AND TESTING**

Monday, March 12, 10:30 a.m. – 12:00 p.m. (SAMPAN B Room)
Session Chair: Dr. Salman Javed, Purdue University

1. **A Software Tool that Extracts Syntax-based Software Metrics based on the Z Formalization**
Raouf Alomainy and Wei Li (University of Alabama in Huntsville, USA)
2. **Towards Tool-Driven Penetration Testing for Form-Based Authentication**
Rebecca A. Woelfel and Joshua J. Pauli (Dakota State University, USA)
3. **Algorithms to Calculate the Manhattan (L1) Distance for Vertical Data Represented in pTrees**
Mohammad K. Hossain, Arjun G. Roy, Arijit Chatterjee, and William Perrizo
North Dakota State University, USA)
4. **Measuring the Overhead of Intel C++ CnC over TBB for Gauss-Jordan Elimination**
Peiyi Tang (University of Arkansas at Little Rock, USA)

12:00 p.m. – 1:30 p.m. LUNCH BREAK ON OWN

SESSION 2A:**APPLICATIONS AND SERVICES - 1**

Monday, March 12, 1:30 p.m. - 3:00 p.m. (SAMPAN A Room)
Session Chair: Dr. Chris Foreman, University of Louisville

1. **TOZE: A GUI Editor and Type Checker for Object-Z**
Tim Parker, Kasi Periyasamy and Kenny Hunt (University of Wisconsin-La Crosse, USA)
2. **UV6: an OS Kernel as an Application Program without Virtualization**
Shuichi Oikawa (University of Tsukuba, Japan)
3. **Using a Screen Real Estate Index to Support Adaptive User Interfaces**
Alfred Taylor, Sr., Karthik Ramalingam, and Les Miller (Iowa State University, USA)
4. **Web-based Translation Support System for Group Reading**
Katsuhiko Hozoji and Susumu Matsumae (Saga University, Japan)

SESSION 2B:**COMPUTER NETWORKS AND SECURITY - 1**

Monday, March 12, 1:30 p.m. - 3:00 p.m. (SAMPAN B Room)
Session Chair: Dr. Les Miller, Iowa State University

1. **An Integrated Approach to Network Vulnerability Scanning for Security Engineers**
Devon J. Greene and Patrick Engebretson (Dakota State University, USA)
2. **An Introductory Look at Vulnerability Hunting**
Adam Klindworth and Joshua Pauli (Dakota State University, USA)
3. **Characterization of a Campus Internet Workload**
Adam H. Villa and Elizabeth Varki (University of New Hampshire, USA)
4. **Applying Open Resilient Cluster Management (ORCM) To A Multi-Chassis Core Router**
Douglas Comer and Salman Javed (Purdue University, USA)

3:00 p.m. – 3:30 p.m. COFFEE BREAK

SESSION 3A:**EDUCATIONAL SYSTEMS**

Monday, March 12, 3:30 p.m. - 5:00 p.m. (SAMPAN A Room)
Session Chair: Dr. Gail Gallitano, West Chester State University

1. **A Professional Development Program Using Graphing Handhelds/Mini-Computers and Its Attitudinal Effect on Teachers of Mathematics - A Two Year Study**
Gail M. Gallitano (West Chester University, USA)
2. **A Curriculum Model for Industrial Control Systems Cyber-Security with Sample Modules**
J. Chris Foreman, James H. Graham, Jeffrey L. Hieb, and Rammohan K. Ragade (University of Louisville, USA)
3. **E-Learning Ecosystem based on Multi-Agent Systems**
Randa Aljebly, Salah Hammami, and Hassan Mathkour (King Saud University, Saudi Arabia)
4. **Losing the Lake: Development and Deployment of an Educational Game**
Joseph M. Vesco, Katie Gilgen, Anne Paine (University of Nevada, Reno, USA), Marissa Owens, E. Michael Nussbaum, Gale M. Sinatra, Sajjad Ahmad, Kent J. Crippen (University of Nevada, Las Vegas, USA), Sergiu M. Dascalu and Frederick C. Harris, Jr. (University of Nevada, Reno, USA)

SESSION 3B:**COMPUTER ARCHITECTURES**

Monday, March 12, 3:30 p.m. - 5:00 p.m. (SAMPAN B Room)
Session Chair: Dr. Ying Jin, California State University

1. **An Interactive Redesign Approach for Trading Test Time, Area, and Fault Coverage in Testable Synthesis**
Soha Baz and Haidar Harmanani (Lebanese American University, Lebanon)
2. **Partition Models for a Shared Dynamically Reconfigurable Fabric**
Mua'ad Abu-Faraj and Ian R. Greenshields (University of Connecticut, USA)
3. **Parallel Implementation of Non-Slicing Floorplan with MPI and OpenMP**
Oluwaseun Owojaiye and Nagi Mekhiel (Ryerson University, Canada)
4. **PCI Probe: A Tool for Testing PCIe Peripheral Devices in 64-bit Windows 7**
Cody Tankersley, Yoginder S. Dandass, and Thomas H. Morris (Mississippi State University, USA)

3:00 p.m. – 3:30 p.m. COFFEE BREAK

TUESDAY, MARCH 13, 2012

**8:00 a.m. – 5:15 p.m. - CONFERENCE REGISTRATION – FUJI Foyer
Coffee/Tea/Pastries**

9:00 a.m. – 10:00 a.m. - KEYNOTE ADDRESS

Yi Pan

**Chair and Professor, Department of Computer Science
Georgia State University**

**“MULTIPLE BIOLOGICAL SEQUENCE ALIGNMENT:
SCORING FUNCTIONS, ALGORITHMS, AND EVALUATIONS”**

Location: DYNASTY Room

10:00 a.m. – 10:30 a.m. COFFEE BREAK

SESSION 4:

SPECIAL SESSION ON SOFTWARE AND INFORMATION SYSTEMS

Tuesday, March 13, 10:30 a.m. – 12:00 p.m. (SAMPAN A Room)

Session Chair: Dr. Narayan Debnath, Winona State University

- 1. Reassuring Electronic Commerce Mechanism Design in User Evaluation System**
Satoshi Takahashi (University of Tsukuba, Japan), Koki Murakata and Tokuro Matsuo (Yamagata University, Japan)
- 2. A System Approach to Software Measurement**
Mark Burgin (UCLA, USA) and Narayan C. Debnath (Winona State University, USA)
- 3. An Online Mechanism for a Sporting Event**
Sajal Mukhopadhyay, Debidas Ghosh (NIT Durgapur, India), and Narayan C. Debnath (Winona State University, USA)

12:15 p.m. – 2:00 p.m. CONFERENCE LUNCHEON

LOCATION: FUJI Room

**CONFERENCE AWARDS
and
GENERAL ASSEMBLY MEETING**

SESSION 5A:**INFORMATION SYSTEMS AND DATABASES - 1**

Tuesday, March 13, 2:00 p.m. – 3:30 p.m. (SAMPAN A Room)
Session Chair: Dr. Albert Kim, University of California - Berkeley

1. **A Decision-Support System for Higher Education, the Saudi Ministry Case Study**
Abdulkader A. Alfantookh, Hussam M. Ramadan, Alaa Eldin M. Hafez, Mourad A. Ykhlef, Ahmad J. AlShibli, and Mourad A. Benchikh (King Saud University, Saudi Arabia)
2. **Using MS WORD as an Improved Tool for Digital Humanities Data Preparation**
Katia P. Mayfield, Emanuel S. Grant, and Crystal Alberts (University of North Dakota, USA)
3. **A Study on Applicability of Hierarchical Task Network Planner in Smart City Scenario: A Smart City Tour and Travel Planning Use Case**
Plaban K. Bhowmick, Debnath Mukherjee, and Prateep Misra (Tata Consultancy Services, India), and Arunasish Sen (Institute of Engineering and Management, India)
4. **Experiments on Synopsis-based TV Program Recommendation**
Snehasis Banerjee, Plaban K. Bhowmick, Debnath Mukerjee, and Prateep Misra (Tata Consultancy Services, India)

SESSION 5B:**COMPUTER NETWORKS AND SECURITY - 2**

Tuesday, March 13, 2:00 p.m. – 3:30 p.m. (SAMPAN B Room)
Session Chair: Dr. S. Jeffrey Besser, Naval Postgraduate School

1. **A Filter-based Approach for SQL Injection Attack Detection**
Ying Jin, Xiaoying Shen, and Chunhui Song (California State University, USA)
2. **Keeping the Bad Eyes Out: Database Security for Forensics Data**
Kinyetta Jeter, Luay A. Wahsheh, Aftab Ahmad, Jonathan M. Graham, Cheryl V. Hinds, Aurelia T. Williams, and Sandra J. DeLoatch (Norfolk State University, USA)
3. **A Vulnerability Evaluation Method for Power Analysis Attacks against Cryptography Circuits**
Masaya Yoshikawa and Toshiya Asai (Meijo University, Japan)

3:30 p.m. – 3:45 p.m. **COFFEE BREAK**

SESSION 6:**INTELLIGENT SYSTEMS AND KNOWLEDGE DISCOVERY - 2**

Tuesday, March 13, 3:45 a.m. – 5:30 p.m. (SAMPAN A Room)
Session Chair: Dr. Frederick Harris Jr., University of Nevada, Reno

1. **Developing a Simulation Platform for Intelligent Transportation Systems Applications Based on Connected Vehicles**
Muhammad Ararat (University of Detroit Mercy, USA and TELECOM Bretagne, France), Utayba Mohammad, Nizar Al-Holou, Malok Alamir Tamer, and Mohamad Abdul-Hak (University of Detroit Mercy, USA)
2. **Mining Twitter Streams for Evaluating Event Relatedness Using a Density Based Clustering Approach**
Chung-Hong Lee, Wei-Shiang Wen (National Kaohsiung University of Applied Sciences, Taiwan) and Hsin-Chang Yang (National University of Kaohsiung, Taiwan)
3. **On Improving Keyword Conversion Rates in Organic & Sponsored Search**
Pierre M. Fiorini (CF Search Marketing, USA)
4. **A Developmental Theory to Resolve the Self's Halting Problem**
S. Jeffrey Besser (Naval Postgraduate School, USA)

WEDNESDAY, MARCH 14, 2012

**8:00 a.m. – 12:00 p.m. - CONFERENCE REGISTRATION – FUJI Foyer
Coffee/Tea/Pastries**

SESSION 7:

APPLICATIONS AND SERVICES - 2

Wednesday, March 14, 9:00 a.m. – 10:30 a.m. (SAMPAN A Room)

Session Chair: Dr. Wen-Chi Hou, Southern Illinois University

- 1. Simplifying Neurorobotic Development with NCSTools**
Corey M. Thibeault, Joshua M. Hegie, Laurence Jayet Bray and Frederick C. Harris, Jr.
(University of Nevada, Reno, USA)
- 2. A Soft Real-Time, Parallel GUI Service in Tessellation Many-Core OS**
Albert Kim, Juan A. Colmenares, Hilfi Alkaff and John Kubiawicz (University of
California Berkeley, USA)
- 3. An Approach of Service Selection and Design with Sensitivity Analysis**
Xiaobu Yuan and Mohit Sud (University of Windsor, Canada)
- 4. A Low Occupancy Study of Artificial Neural Networks on GPUs**
Thomas Donaldson and Yoginder Dandass (Mississippi State University, USA)

10:30 a.m. – 10:40 a.m. COFFEE BREAK

SESSION 8A:

SIGNAL PROCESSING

Wednesday, March 14, 10:40 a.m. -12:00 p.m. (SAMPAN A Room)

Session Chair: Dr. Kasi Periyasamy, University of Wisconsin – La Crosse

- 1. An NMF based Approach for Addressing DNA Microarray Sub-grid Images**
Mohammed M. Elhenawy and Yue Wang (Virginia Tech, USA)
- 2. Mammograms Segmentation Using Log-Normal Distribution**
Yasser Reyad, Ali El-Zaart, and Alaaeldin M. Hafez (King Saud University, Saudi Arabia)
- 3. 3D Scans of As-built Historical Street Scenes in Tamsui**
Naai-Jung Shih, Chia-Yu Lee, Yu-Hwa Yang, Tzu-Ying Chan, and Shih-Cheng Tzeng
(National Taiwan University of Science and Technology, Taiwan)

SESSION 8B:

INFORMATION SYSTEMS AND DATABASES - 2

Wednesday, March 14, 10:40 a.m. -12:00 p.m. (SAMPAN B Room)

Session Chair: Dr. Les Milller, Iowa State University

- 1. Column-oriented Database Systems : A Comparison Study**
Arjun G. Roy, Mohammad K. Hossain, Arijit Chatterjee, and William Perrizo
(North Dakota State University, USA)
- 2. LexSpec: Toward a New Model of Digital Publication**
Kendra Douglas and Joshua Stein (Western Washington University, USA)
- 3. Autonomic Database Management: State of the Art and Future Trends**
Katarina Grolinger and Miriam A. M. Capretz (The University of Western Ontario,
Canada)
- 4. Sufficient Statistics for Re-optimizing Repetitive Queries**
Feng Yu, Wen-Chi Hou, and Michael Wainer (Southern Illinois University, USA),
Cheng Luo (Coppin State University, USA), and Dunren Che (Southern Illinois University,
USA)