

25th International Conference on
Computers and Their Applications
(CATA-2010)

PROGRAM

March 24-26, 2010

Sheraton Waikiki Hotel
Honolulu, Hawaii USA

Sponsored by



International Society for
Computers and Their Applications

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25th International Conference on Computers and Their Applications (CATA-2010)

SPONSOR

International Society for Computers and Their Applications (ISCA)

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Iowa State University

Program Chair

Thomas Philip
Mississippi State University

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WEDNESDAY, MARCH 24, 2010

**7:30 a.m. – 5:45 p.m. CONFERENCE REGISTRATION – Ewa Room
Coffee/pastries – Waianae Room**

**8:30 a.m. – 9:00 a.m. WELCOME and Opening Remarks (Kahuku Room)
Thomas Philip, CATA Program Chair
Hisham Al-Mubaid, U. of Houston-CL, BICoB Program Chair**

9:00 – 10:00 a.m. KEYNOTE ADDRESS

**Dr. Christopher Lee
University of California Los Angeles**

“Mining the Structure of Biological Data through Selection Metrics”

Location: Kahuku Room

10:00 a.m. – 10:30 a.m. Coffee Break

SESSION 1A:

IMAGE PROCESSING

Wednesday, March 24, 10:30 a.m. - 12:00 p.m., Honolulu Room

Session Chair: Dr. John Weiss, South Dakota School of Mines and Technology

- 1. Jewels, Himalayas and Fireworks, Extending Methods for Visualizing N Dimensional Clustering**
W. Jockheck and William Perrizo (North Dakota State University, USA)
- 2. A Randomized Automatic Pixel Purity Index Technique**
Mahmoud Maghrbay, Reda Ammar and Sanguthevar Rajasekaran (University of Connecticut, USA)
- 3. QtImageLib: A Cross-Platform Image Processing Library**
Lucas Jacobs and John M. Weiss (South Dakota School of Mines and Technology, USA)

SESSION 1B:

ARCHITECTURE

Wednesday, March 24, 10:30 a.m. - 12:00 p.m., Kahuku Room

Session Chair: Dr. Sanjeev Baskiyar, Auburn University

- 1. Rapid*Closure: Algebraic Extensions of a Scalar Multiply-add Operation**
Stanislav G. Sedukhin and Toshiaki Miyazaki (The University of Aizu, Japan)
- 2. Empirical Study of Support Vector Machine Kernels with Applications to Microarray Data**
Myungsook Klassen, Nyunsu Kim (California Lutheran University, USA) and
Wei Ming Liu (University of Southern California, USA)
- 3. Improved Real-Time Performance Using a Secondary Bus**
John W. O'Farrell and Sanjeev Baskiyar (Auburn University, USA)

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

SESSION 2A:**IMAGE ANALYSIS**

Wednesday, March 24, 1:30 p.m. - 3:00 p.m., Honolulu Room
Session Chair: Dr. E. T. Hammerand, Arkansas State University

1. **An Image Annotation Approach based on Bag-of-keypoints for Geospatial Location Search**
Chung-Hong Lee (National Kaohsiung University of Applied Sciences, Taiwan),
Hsin-Chang Yang (National University of Kaohsiung, Taiwan) and Shih-Hao Wang
(National Kaohsiung University of Applied Sciences, Taiwan)
2. **Facial Identification and Classification by Scale Invariance Using Content Based Image Retrieval**
Chandrashekar Sivaramakrishna and Gordon Lee (San Diego State University, USA)
3. **Modified Concurrent Access to the B-Link Tree**
E. T. Hammerand and H. C. Su (Arkansas State University, USA)

SESSION 2B:**EDUCATION**

Wednesday, March 24, 1:30 p.m. - 3:00 p.m., Kahuku Room
Session Chair: Dr. Gongzhu Hu, Central Michigan University

1. **Capstone Experience to Undergraduate Software Engineering Students**
Kulasekaran A. Sivakumar and Thomas Philip (Mississippi State University, USA)
2. **A Rescue Robotics PBL Course**
Sabina Jeschke, Frank Hees (RWTH Aachen University, Germany), Nicole Natho, Olivier Pfeiffer (Technische Universität Berlin, Germany)
3. **Direct Quantitative Assessment of Student Learning Outcomes**
Gongzhu Hu (Central Michigan University, USA)

3:00 p.m. – 3:30 p.m. Coffee Break

SESSION 3A:**INFORMATION SIFTING**

Wednesday, March 24, 3:30 p.m. - 5:30 p.m., Honolulu Room
Session Chair: Dr. Frederick C. Harris, Jr, University of Nevada, Reno

1. **Incremental Mining of Across-streams Sequential Patterns in Multiple Data Streams**
Ching-Ming Chao and Yan-Ting Lin (Soochow University, Taiwan)
2. **On the Ranking of Information Retrieval Boolean Model**
Mohamed A. Gawad, Hatem M. El-Boghdadi and Magda B. Fayek (Cairo University, Egypt)
3. **Automated Signal Processing for Biomedical Decision Making**
D. L. Hudson and M. E. Cohen (University of California, San Francisco, USA)
4. **Ringermute: An Audio Data Mining Toolkit**
Marcel A. Levy, Sergiu M. Dascalu and Frederick C. Harris, Jr. (University of Nevada, Reno, USA)

SESSION 3B:

SOFTWARE DEVELOPMENT

Wednesday, March 24, 3:30 p.m. - 5:30 p.m., Kahuku Room

Session Chair: Dr. Kalman Toth, Portland State University

- 1. Modeling Error-based Adaptive User Interfaces**
Les Miller (Iowa State University, USA)
- 2. JPManager: A J2EE Performance Management System**
Jiang Guo and Yuehong Liao (California State University Los Angeles, USA)
- 3. ElectReduce: A Real Time Electricity Consumption Monitor Using Mobile Phones**
Amir Zeid, Ali Dashti, Ahmad Ashour, Abdelwahab Al-Atiqi, Abdullah Al-Shaikh, Salman Al-Saffar (American University of Kuwait, Kuwait)
- 4. Software Estimating: Navigating to the Landing Zone**
Kalman C. Toth (Portland State University, USA)

THURSDAY, MARCH 25, 2010

8:00 a.m. – 5:15 p.m. - CONFERENCE REGISTRATION – Ewa Room

Coffee/pastries - Waianae Room

9:00 – 10:00 a.m. KEYNOTE ADDRESS

Prof. Axel Timmermann
University of Hawaii

“Understanding Global Warming: the Role of Supercomputers”

Location: Kahuku Room

10:00 a.m. – 10:30 a.m. COFFEE BREAK

SESSION 4A:

ALGORITHMS

Thursday, March 25, 10:30 a.m. - 12:30 p.m., Honolulu Room
Session Chair: Dr. Zoë Wood, California Polytechnic State University

- 1. FFTI: Fast In-Place FFT on the Cell Broadband Engine**
Mohamed F. Ahmed, S. Rajasekaran and Reda Ammar (University of Connecticut, USA)
- 2. Predicting Makespan with Latin Square Replication on Computational Grids**
Nathan P. Johnson and James H. Graham (University of Louisville, USA)
- 3. Extension Study on Item-Based P-Tree Collaborative Filtering Algorithm for Netflix Prize**
Tingda Lu, Yan Wang, William Perrizo, Amal Perera and Gregory Wettstein (North Dakota State University, USA)
- 4. Finding Good Paths: Applications of Least Cost Caloric Path Computations**
Zoë Wood, Greg Hoffman and Mark Wazny (California Polytechnic State University, USA)

SESSION 4B:

**SPECIAL SESSION: SOFTWARE ENGINEERING
AND APPLICATIONS**

Thursday, March 25, 10:30 a.m. - 12:30 p.m., Kahuku Room
Session Chair: Dr. Narayan Debnath, Winona State University

- 1. Reusability as Design of Second-Level Algorithms**
M. Burgin (University of California-Los Angeles, USA) and N. Debnath (Winona State University, USA)
- 2. Developing Automated Sign-In System for the UTPB Computer Research Lab**
Royce Cone, Ilhyun Lee and Haesun Lee (The University of Texas of the Permian Basin, USA)
- 3. Text Steganography in Indian Scripts using Compound Characters**
S. Changder (National Institute of Technology-Durgapur, India), N. C. Debnath (Winona State University, USA) and D. Ghosh (National Institute of Technology-Durgapur, India)
- 4. Mathematical Schema Theory for Network Design**
M. Burgin (University of California-Los Angeles, USA)

12:30 p.m. – 2:30 p.m.

**CONFERENCE LUNCHEON
(Ni’lhou Room)**

CONFERENCE AWARDS

and

ISCA ANNUAL GENERAL ASSEMBLY

SESSION 5A:

NETWORKS

Thursday, March 25, 2:30 p.m. - 4:30 p.m., Honolulu Room
Session Chair: Dr. Narayan Debnath, Winona State University

1. **Optimal Admission Control Strategies for Next-gen Wireless Heterogeneous Networks**
Jue Wang, Mansoor Alam and Badlishah bin Ahmad (The University of Toledo, USA)
2. **Pseudo Diameter-Based Pruning - A QOS Based Broadcasting for Wide Area Networks**
B. Gupta, S. Rahimi (Southern Illinois University, USA), N. Debnath (Winona State University, USA), D. Videm, and K. Ethirajan (Southern Illinois University, USA)
3. **A Route Construction Method Based on Received Signal Strength in Wireless Sensor Networks**
Yasuhiro Nose, Akimitsu Kazaki, Takahiro Hara and Shojiro Nishio (Oaska University, Japan)
4. **A High Performance Roll Forward Recovery Algorithm for Ring Networks**
B. Gupta, S. Rahimi, Z. Liu (Southern Illinois University and Southeast Missouri State University, USA) and N. Debnath (Winona State University, USA)

SESSION 5B:

BIOSENSORS/INTELLIGENCE

Thursday, March 25, 2:30 p.m. - 4:00 p.m., Kahuku Room
Session Chair: Dr. Hussam Ramadan, King Saud University

1. **Zero-Net Energy Wearable Biosensors**
Olga Boric-Lubecke, Victor M. Lubecke, Isar Mostafanezhad, and Ehsaneh Shahhaidar (University of Hawaii at Manoa, USA)
2. **Real-Time Scale Invariant Object Recognition Using an Artificial Neural Network**
Jacob Oursland (South Dakota School of Mines and Technology, USA)
3. **Prioritizing the Construction of Short-Road Links Using a Knowledge-Based Decision-Support System**
Hussam M. Ramadan and Yousry I. Taha (King Saud University, Saudi Arabia)

**8:00 a.m. – 12:15 p.m. - CONFERENCE REGISTRATION - Coffee/pastries
(Waianae Room)**

SESSION 6A:

DISTRIBUTED COMPUTING

Friday, March 26, 8:30 a.m. - 10:30 a.m., Honolulu Room
Session Chair: Dr. Reda Ammar, University of Connecticut

- 1. Lightweight Checkpointing and Message Logging for Mobile Nodes**
Jinho Ahn (Kyonggi University, Korea)
- 2. Research the Architectures and Properties of the Active Network**
Huanjiong Zhang (Hangzhou University of Electrical Science and Technology, China)
- 3. Mixed-criticality Scheduling: Improved Resource-augmentation Results**
Sanjoy Baruah, Haohan Li (The University of North Carolina, USA) and Leen Stougie (Vrije Universiteit and CWI, Netherlands)
- 4. A Hardware Implementation of the Advanced Encryption Standard (AES) Algorithm using SystemVerilog**
Bahram Hakhamaneshi and Behnam S. Arad (California State University, Sacramento, USA)

SESSION 6B:

INTELLIGENT SYSTEMS

Friday, March 26, 8:30 a.m. - 10:30 a.m., Kahuku Room
Session Chair: Dr. Freimut Bodendorf, University of Erlangen-Nuremberg

- 1. Requirements for an Intelligent System for Experts**
Stuart H. Rubin, Chuck McCauley (SPAWAR - SSC Pacific, USA), Gordon Lee (San Diego State University, USA) and Qianhui Liang (Singapore Management University, Singapore)
- 2. A Multi-Agent System Infrastructure for Large-Scale Autonomous Distributed Real-Time Intelligence Gathering Systems**
Matthias Scheutz (Indiana University, USA)
- 3. Utilization of Modified CoreGRID Ontology in an Agent-based Grid Resource Management System**
M. Drozdowicz (SRI PAS, Poland), M. Ganzha (SRI PAS, Poland and University of Gdańsk, Poland), K. Wasielewska (SRI PAS, Poland), M. Paprzycki (SRI PAS and Warsaw Management Academy, Poland), I. Kirkov (IPP BAS, Bulgaria), R. Olejnik (CNRS, France), and N. Attaoui (Abdelmalek Essaadi University, Morocco)
- 4. Simulating Complex Feedback Scenarios by Software Agent Approaches or System Dynamics - A Comparative View**
Freimut Bodendorf and Christian Bauer (University of Erlangen-Nuremberg, Germany)

SESSION 6C:**PARALLEL COMPUTING**

Friday, March 26, 8:30 a.m. - 10:30 a.m., Waiialua Room
Session Chair: Dr. Marcin Paprzycki, Polish Academy of Sciences

- 1. Performance Evaluation of Parallel Implementations of a 3-D Tissue Growth Model on a Cluster**
Belgacem Ben Youssef (Simon Fraser University, Canada)
- 2. Implementation of Twofold Loop Algorithms for GPGPU Systems using CUDA**
Akiyoshi Wakatani (Konan University, Japan)
- 3. A Superscalar Processor Model for Limited Functional Units Using Instruction Dependencies**
Jongbok Lee (Hansung University, South Korea)
- 4. Utilizing Recursive Storage in Sparse Matrix-Vector Multiplication—Preliminary Considerations**
Michele Martone, Salvatore Filippone, Salvatore Tucci (University of Rome "Tor Vergata", Italy), Marcin Paprzycki (Polish Academy of Sciences, Poland and Warsaw Management Academy, Poland), and Maria Ganzha (Polish Academy of Sciences, Poland and University of Gdańsk, Poland)

10:30 a.m. – 10:45 a.m. COFFEE BREAK

SESSION 7A:**EMOTION RECOGNITION**

Friday, March 26, 10:45 a.m. - 12:15 p.m., Honolulu Room
Session Chair: Dr. Les Miller, Iowa State University

- 1. EEG Based Emotion Recognition using MFCC and MLP**
Marini Othman, Abdul Wahab and Reza Khosrowabadi (International Islamic University, Malaysia)
- 2. KDE Approach to Emotion Recognition using Brain Waves**
Najwani Razali, Abdul Wahab and Normaziah A. Aziz (International Islamic University, Malaysia)
- 3. Cultural Influence on Speech Emotion Identification**
Norhaslinda Kamaruddin and Abdul Wahab (Nanyang Technological University, Singapore)

SESSION 7B:**AUTOMATED ANALYSIS**

Friday, March 26, 10:45 a.m. - 12:15 p.m., Kahuku Room
Session Chair: Dr. Xuesong Zhang, Southeast Missouri State University

- 1. Data Processing and Analysis of Coal Properties Using Pulsed Neutron Generator**
Xuesong Zhang (Southeast Missouri State University, USA), Daowen Cheng, Deshan Gu and Linmao Liu (Northeast Normal University, China), and Ming Wang (California State University, USA)
- 2. A Unique Instrumentation System Design for Measuring Forces on a Rotating Shaft**
John R. Kearney, Dwight Egbert and Frederick C. Harris, Jr. (University of Nevada, Reno, USA)