ACM Southeast 2019

Conference Program

April 18 – 20, 2019

KSU Center, Kennesaw, Georgia

https://ccse.kennesaw.edu/acmse-2019/
A Note from the Committee:

Welcome to the 2019 ACM Southeast Regional Conference! We are excited the weekend has finally arrived! Thank you for your submissions and all of the work you invested in perfecting your work. We appreciate your patience throughout the submission, review, and planning process. Many of you provided assistance in the planning process, and for that, we are eternally grateful! All of the papers, posters, and workshops being presented are excellent works, and we hope you enjoy the conference!

We have received 200 high quality paper submissions over 13 countries and 105 institutions/departments in 10 technical tracks. Each paper receives a minimum of 3 doubly blind reviews from over 160 volunteers. However, due to space limit, we have to miss lots of high quality papers and only a few can be accepted and presented in the conference. There are 179 submissions for regular/short papers and 23 papers are accepted for regular papers and 28 papers are accepted for short papers. The acceptance rate is 12.85% for regular papers and 17.95% for the short papers. The conference offers 3 keynote speeches, 7 free workshops/tutorials, one panel discussion on Expanding Computing Education Globally through International Articulation Program, and one graduate research symposium.

The 2020 conference needs a hosting site. If you wish to assist in the planning of next year’s conference, please join us Thursday at 4:00 PM in room 460. There is discussion about next year’s conference holding a poster competition and a doctoral symposium. Whether you wish to be a reviewer or planner, your participation is welcome and appreciated!

Wireless access is available at the conference. Please use the following information:

```
ACMSE
acmse2019
```

Thank you again for your involvement in ACMSE 2019! We especially want to thank those of you who reviewed papers. Without your help, the conference would not be possible.
2019 Conference Organization Committee

- Conference Co-Chair: Dr. Dan Lo
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- Program Committee Chair: Dr. Donghyun Kim
- Proceedings Chair: Dr. Eric Gamess
- Local Arrangements Chair: Dr. Sarah North
- Registrar: KSU Continuing Education
- Sponsors and Exhibitors: Dr. Richard Maiti
- Poster Chair: Dr. Mike Franklin
- Graduate Research Symposium: Dr. Dan Lo

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- Eric Gamess, Jacksonville State University, USA
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- Kevin McFall, Kennesaw State University, USA
- Briana Morrison, University of Nebraska Omaha, USA
- Chung Ng, Morehouse College, USA
- Sarah North, Kennesaw State University, USA
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- Reza Parizi, Kennesaw State University, USA
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Amber Wagner, Birmingham-Southern College, USA
Sheng-De Wang, National Taiwan University, Taiwan
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Fan Wu, Tuskegee University, USA
Xiaohua Xu, Kennesaw State University, USA
Mingyuan Yan, University of North Georgia, USA
Tingting Yu, University of Kentucky, USA
Yanqing Zhang, Georgia State University, USA
Wei Zhong, University of South Carolina Upstate, USA

ACMSE Steering Committee

Ken Hoganson
Dan Lo
Mario Guimaraes
Ashraf Saad
Randy Smith
Ka-wing Wong
Schedule At---A---Glance

Thursday 4/18

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<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Location</th>
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</thead>
<tbody>
<tr>
<td>7:30---8:45</td>
<td>Registration</td>
<td>Fountain Area</td>
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</tbody>
</table>
| 8:45---10:00  | Opening and Keynote: Dr. Alessandro Orso, Professor in the College of Computing at the Georgia Institute of Technology  
                  Topic: Software Debugging: Past, Present, and Future                      | Room 400                         |
| 10:00---10:30 | Break                                                                    | Coffee and snacks Outside 400    |
| 10:30---11:45 | Session I, AI and Computational Intelligence  
                  Session Chair: Dr. Felix Hamza-Lup                                      | Room 174                         |
|               | Session II, Big Data, Data Mining, HPC, and Machine Learning  
                  Session Chair: Dr. Kevin McFall                                         | Room 182                         |
| 11:50---13:00 | Lunch                                                                    | Boxed Lunch 400                  |
| 13:00---14:15 | Session III, AI and Computational Intelligence  
                  Session Chair: Dr. Wei Zhong                                              | Room 174                         |
|               | Session IV, Big Data, Data Mining, HPC, and Machine Learning  
                  Session Chair: Dr. Ferosh Jacob                                            | Room 182                         |
| 15:30---16:00 | Break                                                                    | Coffee and snacks Outside 400    |
| 14:15---17:45 | Workshop/Tutorial (#1): 2019 NSF PLab Pre-Conference Faculty Development Workshop                                               | Room 242                         |
|               | Workshop/Tutorial (#2): Using Agile Rituals to Enhance Teaching and Learning in the Online and Face-to-Face Classrooms  
                                                                      | Room 225                         |
|               | Workshop/tutorial (#7): Computing and Institutional Review Boards                                                  | Room 205                         |
| 16:00---17:30 | ACMSE Steering Committee Meeting                                         | 460                              |
| 18:00         | Dinner Reception  
                  Keynote Talk: Flavio Villanustre, VP, Technology & CISO, RELX Distinguished Technologist, LexisNexis Risk Solutions  
                  Topic: Computing in the Post von Neumann Age - Artificial Intelligence, Security, and Quantum Computing | Dinner 400                       |

Friday 4/19

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<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>7:30---8:45</td>
<td>Registration</td>
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### ACMSE 2019

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Food Provided</th>
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</thead>
</table>
| 8:45---10:00 | Session V, Computing Education  
Session Chair: Dr. Xuguang Chen                                        | Room 174      |
|              | Session VI, Cybersecurity  
Session Chair: Dr. Meng Han                                                | Room 182      |
| 10:00---10:30| Break                                                                     | Coffee and snacks  
Outside 400  |
| 10:30---11:45| Session VII, Cybersecurity  
Session Chair: Dr. Thejas Gubbi Sadashiva                                 | Room 221      |
|              | Session VIII, Blockchain, IoT, and Social Media  
Session Chair: Witawas Srisa-an                                            | Room 225      |
| 11:50---13:00| Lunch                                                                     | Boxed Lunch  
400         |
| 13:00---14:15| Session IX, Information Technology and Systems  
Session Chair: Dr. Rochelle Pacio                                         | Room 174      |
|              | Session X, Blockchain, Privacy, Neural Network, and Game  
Session Chair: Dr. Hala ElAarag                                          | Room 182      |
| 13:00---16:00| Poster Session                                                            | Fountain Area |
| 14:15---15:30| Session XI, Software Engineering and Game Design  
Session Chair: Dr. Tathagata Mukherjee                                     | Room 221      |
|              | Session XII, Information Technology and Systems  
Session Chair: Dr. Jose Garrido                                            | Room 225      |
| 15:30---16:00| Break                                                                     | Coffee and snacks  
Outside 400  |
| 14:15---17:45| Workshop/tutorial (#3): Deep Learning with Python  
from Theory to Application                                                | Room 203/205  
Laptops required from participants |
|              | Workshop/tutorial (#4): HPCC Systems Big Data Analytics Workshop         | Room 213/217  
Laptops required from participants |
| 16:00---17:30| Panel Discussion on International Collaboration                          | 460           |
| 18:00        | Banquet Dinner  
Best Paper Award  
Keynote: Dr. Yi Pan, Regents’ Professor and Chair in the Department of Computer Science, Georgia State University  
Topic: Recent Developments in Deep Learning Research                      | Dinner  
400         |

**Saturday 4/20**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Food Provided</th>
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</thead>
<tbody>
<tr>
<td>7:30---8:45</td>
<td>Registration</td>
<td>Fountain Area</td>
</tr>
</tbody>
</table>
| 8:45---10:00 | Session XIII, Fast Abstract Track  
Session Chair: Ms. Nusrat Asrafi                                       | Room 174      |
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<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:45---11:50</td>
<td>Workshop/tutorial (#5): Teaching Recursion via Control Flow and Code Comprehension</td>
<td>Room 242</td>
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<td>Laptops required from participants</td>
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<tr>
<td></td>
<td></td>
<td>Laptops required from participants</td>
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<tr>
<td>10:00---10:30</td>
<td>Break</td>
<td>Fountain Area</td>
</tr>
<tr>
<td>10:30---11:45</td>
<td>Graduate Research Symposium</td>
<td>Room 400</td>
</tr>
<tr>
<td>12:30---17:00</td>
<td>Atlanta City Tour</td>
<td>Boxed Lunch for City Tour Participants</td>
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</tbody>
</table>
## Thursday Sessions

10:30 am – 11:45 am

### Session I: AI and Computational Intelligence

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:30</td>
<td>Narayanan Veliyath, Pradipta De, Andrew Allen, Charles Hodges and Aniruddha Mitra, <em>Modeling Students' Attention in the Classroom using Eyetrackers</em></td>
</tr>
<tr>
<td>11:20</td>
<td>Xiaohua Xu, Benjamin Lee, Yuanfang Chen, Yanxiao Zhao, Shuibing He and Yi Zhao, <em>Delay Efficient Duty-Cycled Combinatorial Algorithm for Link Augment in Cognitive Radio Networks</em></td>
</tr>
</tbody>
</table>

### Session II: Big Data, Data Mining, HPC, and Machine Learning

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:30</td>
<td>Swetha Govindaiah and Mikel Petty, <em>Applying Reinforcement Learning to Plan Manufacturing Material Handling, Part 2: Experimentation and Results</em></td>
</tr>
<tr>
<td>10:55</td>
<td>Katherine Brown and Douglas Talbert, <em>Heuristically Reducing the Cost of Correlation-based Feature Selection</em></td>
</tr>
<tr>
<td>11:20</td>
<td>Torumoy Ghoshal, Silu Zhang, Xin Dang, Dawn Wilkins and Yixin Chen, <em>Improving Performance of Convolutional Neural Networks via Feature Embedding</em></td>
</tr>
</tbody>
</table>

### Session III: AI and Computational Intelligence

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker(s)</th>
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<tbody>
<tr>
<td>13:00</td>
<td>Wenyu Zhu and Richard Chapman, <em>Stereo-Vision-Based Collision Avoidance Simulation</em></td>
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<tr>
<td>13:30</td>
<td>Xi Quan Yang and Ying Sun, <em>Research on Smoke Detection based on DenseNet</em></td>
</tr>
<tr>
<td>13:45</td>
<td>Chaity Banerjee, Tathagata Mukherjee and Eduardo Pasiliao Jr., <em>An Empirical Study on Generalizations of the ReLU Activation Function</em></td>
</tr>
</tbody>
</table>

### Session IV: Big Data, Data Mining, HPC, and Machine Learning

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>13:15</td>
<td>Daniel Brown, Ariaidis Japa and Yong Shi, <em>An Attempt at Improving Density-based Clustering Algorithms</em></td>
</tr>
<tr>
<td>14:00</td>
<td>Sai Chandra Kosaraju, Nelson Zange Tsaku, Pritesh Patel, Tanju Bayramoglu, Girish Modgil and Mingon Kang, <em>Table of Contents Recognition in OCR Documents using Image-based Machine Learning</em></td>
</tr>
</tbody>
</table>
## Friday Sessions

8:45 am – 10:00 am

<table>
<thead>
<tr>
<th>Session V: Computing Education</th>
<th>8:45 am</th>
<th>Wei Jin and Xin Xu, <em>Near-peer Led Workshops on Game Development for Broadening Participation and Diversity in Computing</em></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>9:35 am</td>
<td>Rodrigo Obando, <em>Teaching Object-Oriented Recursive Data Structures</em></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Session VI: Cybersecurity</th>
<th>8:45 am</th>
<th>Brian Khieu and Melody Moh, <em>CBPKI: Cloud Blockchain-based Public Key Infrastructure</em></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>9:35 am</td>
<td>Karl Kevin Tiba Fossoh and Dan Lo, <em>FinTech Imbalance Fraud Discovery Using Diverse Methodologies</em></td>
</tr>
</tbody>
</table>

10:30 am – 11:45 am

<table>
<thead>
<tr>
<th>Session VII: Cybersecurity</th>
<th>10:30 am</th>
<th>Alex Sumner and Xiaohong Yuan, <em>Mitigating Phishing Attacks: An Overview</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Room: 221</td>
<td>10:55 am</td>
<td>Joshua Eckroth, Kim Chen, Heyley Gatewood and Brandon Belna, <em>ALPACA: Building Dynamic Cyber Ranges with Procedurally-Generated Vulnerability Lattices</em></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Session VIII: Blockchain, IoT, and Social Media</th>
<th>10:30 am</th>
<th>Shreya Desai and Meng Han, <em>Social Media Content Analytics beyond the Text: A Case Study of University Branding in Instagram</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Room: 225</td>
<td>10:55 am</td>
<td>Selena He, Aiju Zhang and Mingyuan Yan, <em>Voice and Motion-based Control System: Proof-of-Concept Implementation on Robotics via Internet-of-Things Technologies</em></td>
</tr>
<tr>
<td></td>
<td>11:20 am</td>
<td>Gabriel Bello and Alfredo Perez, <em>Adapting Financial Technology Standards to Blockchain Platforms</em></td>
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</table>
13:00 pm – 14:15 pm

### Session IX: Information Technology and Systems

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<tr>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>13:00</td>
<td>Zi Zhang and Melody Moh, <em>Randomized Load Balancing for Cloud Computing using Bacterial Foraging Optimization</em></td>
</tr>
<tr>
<td>13:25</td>
<td>Eric Gamess and Julio Garroz, <em>Link-Local Multicast Name Resolution: An Implementation and Evaluation</em></td>
</tr>
<tr>
<td>13:50</td>
<td>Kevin Foster and Mikel Petty, <em>A Case Study of the Use of Design of Experiments Methods to Calibrate a Semi-automated Forces System</em></td>
</tr>
</tbody>
</table>

**Room: 174**

### Session X: Blockchain, Privacy, Neural Network, and Game

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>13:00</td>
<td>Qiutai Pan and Xenofon Koutsoukos, <em>Building a Blockchain Simulation using the Idris Programming Language</em></td>
</tr>
<tr>
<td>13:15</td>
<td>Kinnis Gosha, Vinesh Kannan, Lee Morgan and Earl W. Huff Jr., <em>Strategic Partnerships to Enhance Data Structures and Algorithms Instruction at HBCUs</em></td>
</tr>
<tr>
<td>13:30</td>
<td>Vernon Andrews, Analyzing Awareness on Data Privacy</td>
</tr>
<tr>
<td>13:45</td>
<td>Michael Weeks and David Binnion, <em>Training a Neural Network Controlled Non-playing Character with Previous Output Awareness</em></td>
</tr>
<tr>
<td>14:00</td>
<td>Jhanvi Devangbhai Vyas and Meng Han, <em>Understanding the Mobile Game Apps Activity</em></td>
</tr>
</tbody>
</table>
### Session XI: Software Engineering and Game Design

**Room: 221**

- **14:15 pm** Felix G Hamza-Lup, Kyle Bergeron, Daniel Newton, *Haptic Systems in User Interfaces - State of the Art Survey*
- **14:40 pm** Dylan Wang and Teng-Sheng Moh, *Hearthstone AI:Oops to Well Played*
- **15:05 pm** Katia Mayfield, Sara Cline, Adam Lewis, Joshua Brookover, Eric Day, William Kelley, Stewart Sparks, *Designing a Molecular Biology Serious Educational Game*
- **15:20 pm** Emily Turner, Landon Newberry, Sheridan Sangtinga, Jeff Gray, Sandeep Gopu, Jeffery Peoples and Jon Hobbs, *Applying Computer Vision to Track Tool Movement in an Automotive Assembly Plant*

### Session XII: Information Technology and Systems

**Room: 225**

- **14:15 pm** Zongjie Tu and Prabir Bhattacharya, *Fast Training of a Convolutional Neural Network for Brain MRI Classification*
- **14:30 pm** Bailey Granam, Hala ElAarag, *Utilization of Fuzzy Logic in CPU Scheduling in Various Computing Environments*
- **14:45 pm** Zirui Wang and Amber Wagner, *Evaluating a Tactile Approach to Programming Scratch*
- **15:00 pm** Erin Cho and Meng Han, *AI Powered Book Recommendation System*
- **15:15 pm** Karl Kevin Tibas Fossoh and Dan Lo, *Graphical Representation of Text Semantics*

### Saturday Sessions

8:45 am – 10:00 am

### Session XIII: Fast Abstract Track

**Room: 174**

- **8:45 am** Rahwa Bahta and Mustafa Atay, *Translating JSON Data into Relational Data Using Schema-Oblivious Approaches (short paper)*
- **9:00 am** Steffen Lim, Sams Khan, Matteo Alessandro and Kevin McFall, *Spatio-temporal Super-resolution with Photographic and Depth Data using GANs*
- **9:15 am** Joe Potchen, Daemin Lee, Jason Wein, Leland Burns, Kyle Hedden, *Determining the Appeal of an Image Using Machine Learning*
- **9:30 am** Norah Jean-Charles, *Using Machine Learning to Convey Emotions During Requirements Elicitation Interviews*

### Session XIV: Privacy, Modeling, Software Engineering, and Mobile Computing

**Room: 182**

- **8:45 am** Jason Orlosky, Onyeka Ezenwoye, Heather Yates and Gina Besenyi, *A Look at the Security and Privacy of Fitbit as a Health Activity Tracker*
- **9:00 am** Jose Garrido, *High-level Specification and Modeling of Cyber-physical Systems*
- **9:30 am** Tam Nguyen, Phong Vu, Tung Nguyen, *Code Search on Bytecode for Mobile App Development*
- **9:45 am** Tam Nguyen, Phong Vu, Tung Nguyen, *An Empirical Study of Exception Handling Bugs and Fixes*
Panel Discussion
Date Time: 4:00 pm – 5:30 pm, April 19
Place: Room 460

Binbin Jiang, Lance Askildson and Dan Lo, *Expanding Computing Education Globally through International Articulation Program*

Graduate Research Symposium
Date Time: 10:30 am – 11:45 am, April 20
Place: Room 400

- Nusrat Asrafi, *Comparing Performances of Graph Mining Algorithms to Detect Malware*
- Sergiu Buciumas, *Reinforcement Learning Models for Abstractive Text Summarization*

Posters
Date Time: 1:00 pm – 4:00 pm, April 19
Place: Fountain Area

- Ethan Mines and Chris Crawford, *Brain Butler: The Proactive Personal Assistant*
- Rich Halstead-Nussloch, Chelsee Dickson, Kathryn Greer, Shaheer Siddiqui, Ratna Tumuluri, *Recursive Online Class: Advanced Web Application Class Prototypes Online Educational Resources*
- Jon Miller and Christopher Healy, *Have Films Become More Visually Intense?*
- Ilish Kane, Chuy-Thuy Pham, Adam Lewis and Vanessa Miller, *Escape from the Python's Den: An Educational Game for Teaching Programming to Younger Students*
- Yan Wang, Xuelei Ni, *Developing and Improving Risk Models using Machine-learning Based Algorithms*
- Rochelle Pacio, Nelly-Anne Shurri Ndikum, Russelle Steranova Kengne, *Preserving Cameroon's Cultures and Traditions: Using App and Cloud Computing*
Keynote Speakers

Title: Software Debugging: Past, Present, and Future

Speaker: Dr. Alessandro Orso, Professor in the College of Computing at the Georgia Institute of Technology

Time: 8:45 AM, April 18, 2019

Place: Room 400

Abstract: Software debugging, which involves localizing, understanding, and removing the cause of a failure, is a notoriously difficult, extremely time consuming, and human-intensive activity. For this reason, researchers have invested a great deal of effort in developing automated techniques and tools for supporting various debugging tasks. Although potentially useful, most of these techniques have yet to fully demonstrate their practical effectiveness. Moreover, many current debugging approaches suffer from some common limitations and rely on several strong assumptions on both the characteristics of the code being debugged and how developers behave when debugging such code. In this talk, I first provide an overview of the state of the art in the broader area of software debugging. I then present our research on assessing the weaknesses of popular debugging approaches and on developing techniques that aim to overcome such weaknesses. Finally, I discuss a set of open challenges in this area and future research directions that may help address these challenges.

Bio: Alessandro Orso is a Professor and former Associate School Chair in the College of Computing at the Georgia Institute of Technology. He received his M.S. degree in Electrical Engineering (1995) and his Ph.D. in Computer Science (1999) from Politecnico di Milano, Italy. From March 2000, he has been at Georgia Tech. His area of research is software engineering, with emphasis on software testing and program analysis. His interests include the development of techniques and tools for improving software reliability, security, and trustworthiness, and the validation of such techniques on real-world systems. Dr. Orso has received funding for his research from both government agencies, such as DARPA, DHS, NSF, and ONR, and industry, such as Fujitsu Labs, Google, IBM, and Microsoft. He served on the editorial boards of ACM TOSEM and on the Advisory Board of Reflective Corp, served as program chair for ACM-SIGSOFT ISSTA 2010 and program co-chair for IEEE ICST 2013, ACM-SIGSOFT FSE 2014, and ACM-SIGSOFT/IEEE ICSE 2017. He has also served as a technical consultant to DARPA. Dr. Orso is a senior member of the ACM and of the IEEE Computer Society.
Title: Computing in the Post von Neumann Age - Artificial Intelligence, Security, and Quantum Computing

Speaker: Dr. Flavio Villanustre, CISO & Vice President Technology, LexisNexis Risk Solutions

Time: 18:00 PM, April 18, 2019

Place: Room 400

Abstract: Long gone are the days of the dawn of software engineering. Even the idea of a programmer dealing with a stack of punched cards seems archaic, even though the time elapsed represents a blink of an eye in human history. The rate of change in technology and science continues to accelerate and new paradigms emerge almost every day. Computer science and engineering have seen significant breakthroughs in the past two decades, with some of these disruptive technologies having the potential to reshape the way we think about computers.

During this keynote, we will focus on three paradigm-disrupting new technologies: computers that learn from data and non-deterministically manage their own storage and recall, covering Deep Learning, AI and the Differentiable Neural Controller architecture. We will also review distributed computing on the Blockchain, and, last but not least, the way Quantum computers change the way we think about computational complexity. Because, as Abraham Lincoln said, “The best way to predict the future is to create it.”

Bio: Dr. Flavio Villanustre is CISO and VP of Technology for LexisNexis® Risk Solutions. In this position, he is responsible for Information Security and he leads the HPCC Systems® overall platform strategy and new product development. Dr. Villanustre is also involved in a number of projects involving Big Data integration, analytics, and Business Intelligence.

Prior to 2001 when he began his career at LexisNexis Risk Solutions, Flavio served in a variety of roles at different companies including Infrastructure, Information Security, and Information Technology. In addition to this, Dr. Villanustre has been involved with the open source community for more than 15 years through multiple initiatives. Some of these include founding the first Linux User Group in Buenos Aires (BALUG) in 1994, releasing several pieces of software under different open source licenses, and evangelizing open source to different audiences through conferences, training, and education. Prior to his technology career, Dr. Villanustre was a neurosurgeon.
Title: Recent Developments in Deep Learning Research

Speaker: Dr. Yi Pan, Regents' Professor and Chair in the Department of Computer Science, Georgia State University

Time: 6:00 PM, April 19, 2019

Place: Room 400

Abstract:

Due to improvements in mathematical formulas, availability of big data and increasingly powerful computers, we can now model many more layers of virtual neurons (deep neural networks or deep learning) than ever before. Deep learning is now producing many remarkable recent successes in computer vision, automatic speech recognition, natural language processing, audio recognition, and medical imaging processing. Although various deep learning architectures and novel algorithms have been applied to many big data applications, extending deep learning into more complicated applications such as bioinformatics or medical images will require more conceptual and software breakthroughs, not to mention many more advances in processing power. In this talk, I will outline the challenges and problems in deep learning research. They include design of new architectures, handling high dimensional data, encoding schemes, mathematical proofs, optimization of hyperparameters, logic and reasoning, result explanation and hardware support for deep learning. Some of our solutions and preliminary results in these areas will be presented in this talk.

Bio: Dr. Yi Pan is currently a Regents' Professor and Chair of Computer Science at Georgia State University, USA. He has served as an Associate Dean and Chair of Biology Department during 2013-2017 and Chair of Computer Science during 2006-2013. Dr. Pan received his B.Eng. and M.Eng. degrees in computer engineering from Tsinghua University, China, in 1982 and 1984, respectively, and his Ph.D. degree in computer science from the University of Pittsburgh, USA, in 1991. His profile has been featured as a distinguished alumnus in both Tsinghua Alumni Newsletter and University of Pittsburgh CS Alumni Newsletter. Dr. Pan's research interests include parallel and cloud computing, wireless networks, and bioinformatics. Dr. Pan has published more than 250 journal papers with over 80 papers published in various IEEE journals. In addition, he has published over 150 papers in refereed conferences. He has also co-authored/co-edited 43 books. His work has been cited more than 9900 times. Dr. Pan has served as an editor-in-chief or editorial board member for 17 journals including 7 IEEE Transactions. He is the recipient of many awards including IEEE Transactions Best Paper Award, several other conference and journal best paper awards, 4 IBM Faculty Awards, 2 JSPS Senior Invitation Fellowships, IEEE BIBE Outstanding Achievement Award, NSF Research Opportunity Award, and AFOSR Summer Faculty Research Fellowship. He has organized many international conferences and delivered keynote speeches at over 60 international conferences around the world.
Workshops/Tutorials

Workshop/Tutorial (#1): 2019 NSF PLab Pre-Conference Faculty Development Workshop
Date and Time: 14:15---17:45, 4/18
Place: Room 242
Host: Dr. Dan Lo, Kennesaw State University
Laptops required from participants

This pre-conference faculty development workshop associated with the 2019 ACMSE conference is intended to promote information assurance and security (IAS) education, to enhance student learning experience, and to foster collaboration among faculty in the IAS field using an innovative portable learning and teaching platform, PLab. Each selected participant will receive a stipend of $300 to compensate travel cost, sponsored in part by National Science Foundation. Participants must register the conference (early registration by Feb. 28). The application deadline is Feb. 21, 2019. The workshop date is on April 18, 2019 (Thursday).

This workshop provides an excellent opportunity to develop instructional excellence and to network with peers. Expected outcome of the workshop is to provide concrete case studies, and hands-on lab material, test questions, and evaluation rubrics that can be applied in teaching information assurance in computing related courses. The workshop will also focus on developing effective evaluation instruments that can lead to peer-reviewed publications in CS education conferences/journals.

Workshop/Tutorial (#2): Using Agile Rituals to Enhance Teaching and Learning in the Online and Face-to-Face Classrooms
Date and Time: 14:15---17:45, 4/18
Place: Room 225
Title: Using Agile Rituals to Enhance Teaching and Learning in Online and Face-to-Face Classrooms
Statement of Purpose
Host: Dr. Andrea Hulshult, Miami University

The purpose of this tutorial/workshop session is to introduce computing and software engineering educators on how using Agile rituals can enhance teaching and learning in both online and face-to-face courses. Since the Agile way of working is deeply rooted in the software development industry and computing and software engineering students should learn the Agile of working, educators can also use these same Agile practices to positively influence student learning and their teaching.

Objectives
The objectives of this tutorial/workshop session are to provide a brief overview of the Agile way or working and its foundation in the software development industry sector. The session will then discuss the Agile Manifesto for Teaching and Learning and how Agile practices can be used in the classroom to enhance student learning. The following Agile topics will be discussed. As each topic is discussed, examples of how these Agile practices can be used in online and face-to-face classroom to enhance student learning and teaching will be provided:

• Social Contracts
• Timeboxing
• MoSCoW
• Stand-ups
• Retrospectives
• Storyboards—physical and online
• Showcases
• Lean Coffee
• Free applications for an Agile educator

Prerequisites: There are no prerequisites required for this tutorial/workshop session.
Intended Audience: The intended audience for this tutorial/workshop session is educators for all levels—K-12 and higher education.
Duration: The purposed duration of this tutorial/workshop session is 1.5 hours.
Materials Needed: There are no materials needed for this session. The presenter will bring any materials necessary to explain the concepts.
Resources to be Handed Out: The presenter will hand out a hard copy or provide electronic access to a PowerPoint file that summarizes the Agile concepts presented and how they can be incorporated into the classroom.
Workshop/tutorial (#3): Deep Learning with Python from Theory to Application
Date and Time: 14:15---17:45, 4/19
Place: Room 203/205
Laptops required from participants
Host: Dr. Ferosh Jacob, Homedepot

This tutorial is intended to give a comprehensive overview of the deep learning. The goal is to make deep learning accessible to engineers who seek to apply deep learning to problems they are trying to solve both in industry and academia. We will be covering both theory and application that include implementing solutions using the powerful TensorFlow library. We will begin by introducing the fundamental concepts in deep learning, provide an introduction to a leading library in the field, TensorFlow, and finish by walking the audiences through hands-on experiences with exciting examples of applications where deep learning shines and provide the resources and links for the next steps.

Workshop/tutorial (#4): HPCC Systems Big Data Analytics Workshop
Date and Time: 14:15---17:45, 4/19
Place: Room 213/217
Host: Lili Xu, Trish McCall and Jessica Lorti, LexisNexis Risk

Big data continues to transform the landscape of financial services. Data Lake is replacing the traditional spreadsheet used by human traders. To keep with the modern technology and maintain a competitive edge, big data analytics is adopted by more and more finance institutions and companies to analyze stock data. In this workshop, we will introduce open source high performance computing platform HPCC Systems and how to leverage its big data analytics power to predict stock trend.

Statement of purpose:
Introduce Big Data platform HPCC Systems and its related big data analytics technique to the wider audience from KSU.

Objectives:
The workshop aims to explore how HPCC Systems quickly ingests raw data flow via standardizing, cleansing, and enriching. Then we will show how HPCC Systems digests the stock data and estimates the unknown value via its Machine Learning technology.

Prerequisites: None

Intended audience:
All KSU students and faculty are welcome to attend this free workshop event

Duration: 2-3hours

Materials needed (including lab space): Optional to bring Laptop which is helpful for interactive session

Workshop/tutorial (#5): Teaching Recursion via Control Flow and Code Comprehension
Date and Time: 8:45---11:50, 4/20
Place: Room 242
Laptops required from participants
Host: Dr. Xuguang Chen, Saint Martin's University

Recursion is an important technique for a student in computer science. It is usually covered for the first time in a course introducing programming language (i.e., in a CS1 course), and then applied in other courses such as data structures, algorithm analysis, principles of programming languages, and software engineering. In a CSC1 course, recursion can be introduced in different ways. For example, it can be scheduled in the last week of a semester as a supplementary topic helping students broaden their horizons. It can also be scheduled as a mandatory topic and introduced before or after the loop is covered. Recursion
can be considered technically a self-referencing function, which means that, as a special case of the function call, a function calls itself. Thus, based on the author’s experience, a better time to introduce recursion is after how to define a function and how to perform a function call are covered. When teaching, a usual approach is to start with the introduction to the definition of recursion, followed by typical examples like factorial, Fibonacci number, or tower of Hanoi. When working on an example, the corresponding formula was first introduced, and then, the implementation in a programming language (such as in C++, Java, or C#) was shown. Based on the feedback from the students and the author’s experience, such a design is usually suffered by several limitations. Recursion is a special case of the function call. When understanding a function call (i.e., one function calls the other), a challenge students often encounter is that they often cannot figure out the working process of a function call in mind. Similarly, when working on recursion, students can easily understand the basic idea of recursion after introducing the definition, but they often struggle with the implementation, especially figure out the flow of control in a recursion. Hence, in order to help students overcome this challenge, the author adopted a new design. In this solution, recursion is introduced after discussing function calls, assisting with diagrams that are similar to dynamic call graphs, helping the student better comprehend the flow of control when a function is calling itself. It starts with reviewing the flow of control during a function call (one function calls the other) represented by the diagrams, helping students better understand the call process. Then, typical recursive examples, for instance factorial, is introduced and represented by the diagrams. After that, other typical examples were explained and the features of recursion were summarized, based on which the definition of recursion was finally derived.

In this tutorial, the process of teaching recursion in the context of function call is covered, plus the diagrams similar to dynamic flow graphs. It started by examples showing the flow of control during a function call, followed by typical recursive examples, based on which the features and definition of recursion were summarized. This tutorial also includes the teaching materials (such as examples and the extended flow of control diagrams) use for discussing recursion, the in-class exercises and assignments provided to the students.

Date and Time: 8:45---11:50, 4/20
Place: Room 225
Laptops required from participants
Host: Dr. Kevin McFall, Kennesaw State University

In this hands-on course, you will learn the basics of deep learning by training and deploying neural networks. You will:

1. Implement common deep learning workflows such as Image Classification and Object Detection.
2. Experiment with data, training parameters, network structure, and other strategies to increase performance and capability.
3. Deploy your networks to start solving real-world problems.

On completion of this course, you will receive a certificate of completion from the NVIDIA Deep Learning Institute and be able to start solving your own problems with deep learning.

Workshop/tutorial (#7): Computing and Institutional Review Boards
Date and Time: 14:15---17:45, 4/18
Place: Room 205
Laptops required from participants
Host: Dr. Richard Halstead-Nussloch and Dr. Paola Spoletini

An Institutional Review Board (IRB) serves to protect human participants in research as well as the organizations and researchers pursuing the studies. In the current environment, computing has many direct and indirect touchpoints with IRBs. A prime example of a direct link occurs whenever humans are interviewed or surveyed, e.g., for requirements gathering or user acceptance testing as full compliance requires an IRB review; within this context, computing professionals become consumers of the IRB service, as following appropriate IRB protocol provides protection for the developers as well as the human subjects they interview for requirements or rely on for user acceptance and usability evaluation. On the producer
side of the IRB service, because most research data are computerized, there are also many indirect links between computing and the IRB, e.g., data security, data archiving, and the like.

The main goal of this workshop is to discuss, reason and provide insight on both these aspects and create and discuss a list of tools that support computing researchers and instructors in their IRB application and the set of requirements that IRBs have for the computing community.

This workshop intends to increase the capability of the computing community to comply with and better serve the needs of Institutional Review Boards while also adding to the set of resources for effectively and ethically completing research and student projects. Major intentions include establishing a community of practice of IRB expertise for the computing profession that will maintain a toolkit of computing-related IRB resources and pursue and publish computing research in support of IRBs and ethical treatment of human research subjects.

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