Monday, November 2, 2015

8:00 AM 5:00 PM  Registration
8:00 AM 9:00 AM  Continental Breakfast
9:00 a.m. 10:00 a.m.  Opening Session & Welcome

Glenda Turner
The MITRE Corporation, USA

Morning Plenary

Olivier de Weck, PhD
Professor of Aeronautics & Astronautics & Engineering Systems Executive Director, MIT Production in the Innovation Economy Study Co-Director, Center for Complex Engineering Systems at KACST & MIT, USA

Title: When is complex too complex? Graph energy and its role in proactive complexity management of cyber-physical systems.

10:00 AM 10:30 AM  Morning Break

10:30 AM 12:00 PM  Concurrent Technical Sessions

Intelligent & Adaptive Systems:
Deep Neural Networks
Session Chair: Jonathan A. Cox (Sanda National Laboratories, USA)
Room: Riviera/Granada

349. A Signal Processing Approach for Cyber Data Classification with Deep Neural Networks | Jonathan A. Cox, Conrad D. James, James B. Ahrone (Sanda National Laboratories, USA)

11. Multidimensional Joint Scale and Cluster Analysis | Mika Sato-Itc (University of Tsukuba, Japan)

422 - Diagnosing Tropical Cyclone Rapid Intensification Using Kernel Methods and Reanalysis Datasets | Andrew Mercer, Alexandra Grimes (Mississippi State University, USA)

18 - Semi-Supervised Clustering for Sparserly Sampled Longitudinal Data | Merko Takagishi, Hiroshi Yashima (Doshisha University, Japan)

442 - Computer-Assisted System to Generate a New Intelligent Rotary Dental Flex (IRD) Models | Tamer M. Nassef (Mer University for Science and Technology, Egypt)

38 - Clustering Quality Improvement of k-means using a Hybrid Evolutionary Model | Jeyhun Hamidov, Murat Ozbayoglu (TOBB University of Economics and Technology, Turkey)

454 - Neural Network-Based Drug Abuse Treatment Optimization | Jeff Cohen (University of Connecticut, USA); Abdy Iramoko, Iman Salehi (University of Hartford, USA)

24 - Analyzing Responses from Lifet Surveys and Risk-Adjusted Ranking: A Data Analytics Perspective | Abhijit Gosavi (Missouri University of Science and Technology, USA)

12:00 PM 1:30 PM  Luncheon & Afternoon Plenary

Amit Basu, PhD
Geonomics and Computational Biology Lead
Lockheed Martin, USA

Title: Exploiting Big Data in Precision Medicine

1:30 PM 3:00 PM  Concurrent Technical Sessions

Business & Financial Analytics
Session Chair: David Enke (Missouri University of Science and Technology, USA)
Room: Riviera/Granada

80 - Noise Cancelling in Volatility Forecasting Using an Adaptive Neural Network Filter | Soheil Almasi Monfared, David Enke (Missouri University of Science and Technology, USA)

105 - A Novel Theoretical Framework Formulated for Information Discovery from Number System and Collatz Conjecture Data | Michael A. Idowu (Abertay University, United Kingdom)

8 - A Simulation-based Approach to Risk Assessment and Mitigation in Supply Chain Networks | Mamadou Seck, Ghaith Rabadi, Christian Koestler (Old Dominion University, USA)

45 - Optimizing MCO Parameters via Genetic Algorithms for Soybean Futures | Pradeeb S. Wilke, Taille Enke (Missouri University of Science and Technology, USA)

314 - Adaptation of Spike-Timing Dependent Plasticity to Unsupervised Learning for Polychronous Wavefront Computing | Fred Highland, Corey B. Hart (Lockheed Martin IS&GS, USA)

32 - Simulation Tool for Asynchronous Cortical Streams (STACS): Interfacing with Spiking Neural Networks | Felix Wang (University of Illinois at Urbana-Champaign, USA)

529 - An Experimental Hidden Markov Model and the Speech Signal | Jacob D. Bryan; Stephen E. Levenson (University of Illinois at Urbana-Champaign, USA)

23 - Adaptive Filtering Using Complex Data and Quaternions | Tokunbo Ogunfunmi (Santa Clara University, USA)

3:00 PM 3:30 PM  Afternoon Break

3:30 PM 5:00 PM  Concurrent Technical Sessions

Intelligent & Adaptive Systems:
Computational Intelligence
Session Chair: Walker H. Land (Retired, Binghamton University, USA)
Room: Riviera/Granada

361 - Predicting with Confidence: Extensions to the GRNN Oracle Enabling Quantification of Confidence in Predictions | Walker H. Land, (Retired, Binghamton University, USA); J. David Schaeffer (Binghamton University, USA)

367 - Synthetic Rating on Talent Evaluation-Similarity of Subsets | Shujun Tang, Rajan Ahn (West Texas A&M University, USA)

368 - Fuzzy Inference Algorithm Based on Quantitative Association Rules | Ling Wang, Ji-Yuan Dong, Shu-Lin Li (University of Science and Technology Beijing, China)

373 - Instantaneous Modelling and Reverse Engineering of Data-Consistent Prime Models in Seconds | Michael A. Idowu (Abertay University, United Kingdom)

362 - Adaptive Filtering Using Complex Data and Quaternions | Tokunbo Ogunfunmi (Santa Clara University, USA)

66 - Biotic Knowledge Extraction for Multi-Factor Authentication and Key Exchange | Philip H. Griffin (Griffin Information Security, USA)

72 - Extracting Meaningful Entities from Human-Generated Tactical Reports | Jinrhong K. Guo, David Van Brackle, Nicolas LuFaas, Martin D. Hofmann (Lockheed Martin Advanced Technology Laboratories, USA)

32 - An Interactive Algorithm to Construct an Appropriate Nonlinear Membership Function Using Information Theory and Statistical Method | Takaaki Hasek (Waseda University, Japan); Hideki Katsugi (Hiroshima University, Japan); Hime Takesaki (National Statistics Center, Japan)

92 - Analyzing Stakeholders Using Fuzzy Cognitive Mapping | Patrick Hester (Old Dominion University, USA)
Mediterranean Foyer
Opening Announcements and Plenary
10:00 a.m. - 10:00 a.m.

Mediterranean Foyer
Continental Breakfast
10:30 AM - 12:00 PM

Morning Break
10:30 AM - 10:30 AM

Cyber Physical Systems:
Cyber Security
Session Chair: Douglas A. Bodnar
(Georgia Institute of Technology, USA)
Room: Riviera/Granada
221 - Using Discrete Event Simulation to Model Attacker Interactions with Cyber and Physical Security Systems | Casey Perkins, George Muller (Pacific Northwest National Laboratory, USA)
227 - Cyber Security Challenges within the Connected Home Ecosystem Futures | Abdulkarim Ano (University of West England, United-Kingdom)

Mediterranean Foyer
Cash Bar
7:00 PM - 7:00 PM

Title: Deep Neural Networks and Their Role in the Quest for Human-Like Brain Power
10:00 AM - 10:30 AM

Cyber Physical Systems:
Data & Analytics:
Social Network Data & Collective Analytics
Session Chair: Iveta Mrázová
(Charles University, Czech Republic)
Room: Monte Carlo
52 - A Systemic Approach to Re-fit Force Development and Operations Functions in Delivering an Organizational Program | Syed W. Hussaini (Tata Consultancy Services, India)
261 - A Systemic Approach to Re-fit Force Development and Operations Functions in Delivering an Organizational Program | Syed W. Hussaini (Tata Consultancy Services, India)

Luncheon & Afternoon Plenary
12:00 PM - 1:30 PM

Sajal K. Das, PhD
IEEE Fellow
Chair of Computer Science Department
Daniel St. Clair Endowed Chair in Computer Science
Missouri University of Science and Technology, USA

Title: Beyond Cyber-Physical Era: What's Next?
1:30 PM - 3:00 PM

Cyber Physical Systems:
Systems Modelling & Design I
Session Chair: Chris Oriolowski
(Georgia Washington University, USA)
Room: Riviera/Granada
267 - Towards an Adaptive Model for Collaborative Simulation: From System Design to Lessons Learned: A Use Case from Aircraft Industry | Laura Rosa Castro (IERT SystemX, France); Julie Star/La Cardinal (CentraleSupélec, France); Martine Cabot (Arbus Group Innovations, France)
287 - Using a Systemic Perspective to Support Engineering Change Management | Julian Willberg, Fatoz Elia, Udo Lindemann (Technische Universität München, Germany); W. D. Tammela (University of California, Berkeley, USA)

Mediterranean Foyer
Afternoon Break
3:30 PM - 5:00 PM

Cyber Physical Systems:
Systems Modelling & Design II
Session Chair: Ronald E. Giachetti
(Naval Postgraduate School, USA)
Room: Riviera/Granada
274 - Towards Modeling Data Infrastructures in the Asset Management Domain | Quoted
240 - Application of System Design for Operational Effectiveness for Architectural Modeling of the SoS Relationship Between Primary and Enabling Architectures | Adam L. Decker (Georgia Institute of Technology, USA); Martine Cabot (Arbus Group Innovations, France); Brian D. McNeil (Sandia National Laboratories, USA)

Best Paper Awards Banquet and Plenary
6:30 PM - 7:00 PM

Robert R. Hoffman, Ph.D
Senior Research Scientist
Institute for Human and Machine Cognition, USA

Title: Challenges for a Theory of Complex Cognitive Work Systems
7:00 PM - 9:30 PM
**Title:** Models are Complex Too

1:15 PM 3:00 PM

**Intelligent & Adaptive Systems: Engineering Applications of Machine Learning**

Session Chair: S.H. Anderson (University of Missouri, USA)

Room: Riviera/Granada

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
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<tbody>
<tr>
<td>478 - The Optimisation of Bayesian Classifiers in Predictive Spatial Modelling for Secondary Mineral Deposits</td>
<td>Adam M. Ibrahim, Brandon Bennett (University of Leeds, United Kingdom); Fatma Isaaka (Sheffield Hallam University, United Kingdom)</td>
</tr>
<tr>
<td>460 - Assessment of Selected Methods for Estimating Chemical Transport Parameters from Computed Tomographic Imagery</td>
<td>S.H. Anderson, R.L. Peyer (University of Missouri, USA); D.J. Hinzic (Emiron, USA)</td>
</tr>
<tr>
<td>496 - Modeling of a Neuro Fuzzy System to Develop an Efficient Method to Get a Specific Color Paint from the Color Model Cyan, Magenta and Yellow (CMY) Under Terms of Open Source</td>
<td>Victor Pula, Xavier Serrano (Universidad de la Politécnica Salesiana, Ecuador)</td>
</tr>
<tr>
<td>466 - Tomographic Measured Spatial Distributions of Non-Aqueous Phase Liquids in Porous Media</td>
<td>S.H. Anderson, R.L. Peyer (University of Missouri, USA); J.L. Holmes (Albatite Consultants LLC, USA)</td>
</tr>
<tr>
<td>448 - Gender Effects in Surface Electromyographic Activity of the Biceps Brachii Muscle during Prolonged Isometric Contraction</td>
<td>Nizam Uddin Ahamed, Zulkifli bin md Yusof (University Malaysia Pahang, Malaysia); Tamer M. Nassef (Misr University for Science and Technology, Egypt)</td>
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**Cyber Physical Systems: Interacting Systems & Collective Dynamics**

Session Chair: Syed Rizvi (Penn State University, USA)

Room: Monte Carlo

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
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</thead>
<tbody>
<tr>
<td>191 - Utilising Third Party Auditing to Manage Trust in the Cloud</td>
<td>Syed Rizvi, Kelsey Karpiniski, Brennen Kelly, Taryn Walker (Penn State University, USA)</td>
</tr>
<tr>
<td>198 - Elastic Scaling of Cloud Application Performance Based on Western Electric Rules by Injection of Aspect-Oriented Code</td>
<td>Konstantin Benz, Thomas M. Bohnt (Zurich University of Applied Sciences, Switzerland)</td>
</tr>
<tr>
<td>208 - Analyzing the Integration of Cognitive Radio and Cloud Computing for Secure Networking</td>
<td>Syed Rizvi, Nathan Sheppard, John Mitchell (Penn State University, USA)</td>
</tr>
<tr>
<td>213 - Cloud Services Architectures</td>
<td>Mehmet Toy (Comcast Cable Communications Management, LLC, USA)</td>
</tr>
<tr>
<td>472 - A Computerized Tomographic Data Analysis System to Evaluate the Dental Implant Surface Roughness</td>
<td>Flavia M. Mousas (Papamos, University, Egypt); Magdy A. Awadalla, Mona K. Marw (Alexandria University, Egypt); Tamer M. Nassef (University for Science and Technology, Egypt)</td>
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3:00 PM 3:15 PM Afternoon Break

3:15 PM 5:00 PM

**Intelligent & Adaptive Systems: Concurrent Technical Sessions**

Session Chair: Gene Lesinski (United States Military Academy, USA)

Room: Riviera/Granada

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
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<tbody>
<tr>
<td>153 - A Pragmatic Method for Assessing Systems Architectures During the Architecture Generation Process with a Focus on Repurposing Business Software to Systems Engineering</td>
<td>Kyle Butler (Missouri University of Science and Technology, USA)</td>
</tr>
<tr>
<td>160 - A Model for Assessing UAV System Architectures</td>
<td>Andrew Renaud (Missouri University of Science and Technology, USA)</td>
</tr>
<tr>
<td>176 - Selecting Attributes, Rules, and Membership Functions for Fuzzy SSS Architecture Evaluation</td>
<td>Lois Pape, Sridharthu Agamal, Chian Dagh (Missouri University of Science &amp; Technology, USA)</td>
</tr>
<tr>
<td>168 - Application of Value Focused Thinking and Fuzzy Systems to Assess System Architecture</td>
<td>Gene Lesinski (United States Military Academy, USA)</td>
</tr>
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<td>428 - Uniqueness and Causes of the California Drought</td>
<td>Michael B. Richman, Lance M. Leslie (University of Oklahoma, USA)</td>
</tr>
</tbody>
</table>

**Cyber Physical Systems: Concurrent Technical Sessions**

Session Chair: Chandru Mirchandani (George Washington University, USA)

Room: Monte Carlo

<table>
<thead>
<tr>
<th>Title</th>
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<tbody>
<tr>
<td>113 - Real-Time Complex Event Processing and Analytics for Smart Grid</td>
<td>Guang Liu, Wendong Zhu, Chris Saunders, Feng Gai (SGRI North America, USA); Yang Yu (Stanford University, USA)</td>
</tr>
<tr>
<td>120 - Smart Waste Collection System Based on Location Intelligence</td>
<td>Jose M. Gutierrez, Morten Herlau (Albatite Consultants LLC, USA); Michael Jensen (NetPlan A/S, Denmark); Tahe Razi (Radio Analyzer, Denmark)</td>
</tr>
<tr>
<td>128 - An Information-centric Approach to Engineering and Manufacturing Cyber Physical Systems in the Defense Industry</td>
<td>George L. Ball, Christopher Kiggundu, Leslie Piddle (Raytheon Company, USA)</td>
</tr>
<tr>
<td>183 - Cloud-Based Ground System for Telemetry Processing</td>
<td>Chandru Mirchandani (George Washington University, USA)</td>
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<tr>
<td>307 - Understanding Space Launch Vehicle Complexity: A Case Study in Combustion Instabilities</td>
<td>Ronald H. Freeman (Northcentral University, USA)</td>
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