

**Complex Adaptive Systems Conference**  
**Theme: Cyber Physical Systems and Deep learning**  
**November 5-7, 2018, Chicago, Illinois, USA**

Technical Paper Schedule

**Monday, November 5, 2018**

9:00 a.m. – 10:45 a.m.

**Session 1 – Cyber Physical Systems I**

*Chair: Leonard Petnga*

*University of Alabama-Huntsville (USA)*

**Systems Engineering Design: Architecting Trustworthiness in Cyber Physical Systems Using an Extended Aggregated Modality**

Brian Connett | Bryan O'Halloran (U.S. Naval Postgraduate School, USA)

**Non-Commutativity, Incompatibility, Emergent Behavior and Decision Support Systems**

Mustafa Canan (Naval Postgraduate School, USA)

**Conceptual Modeling of Cyber-Physical Gaps in Air Traffic Control**

Yaniv Mordecai (Holon Institute of Technology, Israel)

**System of Systems Architecting Problems: Definitions, Formulations, and Analysis**

Hadi Farhangi (Savannah State University, USA); Dincer Konur (Texas State University, USA)

**Space-based Collision Avoidance Framework for Autonomous Vehicles**

Jinke Yu | Leonard Petnga (University of Alabama in Huntsville, USA)

11:00 a.m. – 12:45 p.m.

**Session 2 – Deep Learning and Data Analysis I**

*Chair: Gene Lesinski*

*US Military Academy, West Point (USA)*

**DenseNet for Anatomical Brain Segmentation**

Ram Deepak Gottapu | Cihan H. Dagli (Missouri University of Science and Technology, USA)

**Anomaly Detection and Classification in Cellular Networks Using Automatic Labeling Technique for Applying Supervised Learning**

S M Abdullah Al Mamun | Juha Valimaki (TTG International Ltd, Turkey)

**Multi-objective Evolutionary Neural Network to Predict Graduation Success at the United States Military Academy**

Gene Lesinski (United States Military Academy, USA); Steven Corns (Missouri University of Science and Technology, USA)

**Learning from Experience: An Automatic pH Neutralization System Using Hybrid Fuzzy System and Neural Network**

Ethar H. K. Alkamil (Missouri University of Science and Technology, USA; University of Basrah, Iraq); Seaar Al-Dabooni (Basrah Oil Company, Iraq; Applied Computational Intelligence Laboratory, USA); Ahmed K. Abbas (Missouri University of Science and Techn

## **Benchmarking Supervised Learning Frameworks for Engineering Highly Scalable Intelligent Systems**

Om Narayan | Munaf Arshad Qazi | Raman Kannan (Tandon School of Engineering, NYU)

1:45 p.m. – 3:30 p.m.

### **Session 3 – Cluster Analysis and Prediction I**

*Chair: Gürsel A Süer,*

*Ohio University (USA)*

#### **Selection of Assembly Systems; Assembly Lines vs. Seru Systems**

Aaya Aboelfotoh | Gürsel A Süer; Md Abdullah (Ohio University, USA)

#### **Multidimensional Kernel Principal Component Analysis of False Alarms of Rapidly Intensifying Atlantic Tropical Cyclones**

Andrew Mercer | Alexandria Grimes | Kimberly Wood (Mississippi State University, USA)

#### **Astronomical Knowledge Discovery of Very Faint Galaxies**

María José Márquez | Tamás Budavari | Luis Manuel Sarro (EUMETSAT, Germany)

#### **Learning to Operate an Excavator via Policy Optimization**

Benjamin J. Hodel (Caterpillar, Inc., USA)

#### **Predicting the Future with Artificial Neural Network**

Anifat Olawoyin | Yangjuin Chen (University of Winnipeg, Canada)

#### **Predicting of Microalgae *Scenedesmus* sp. Production in Internal-Loop Photobioreactor via Artificial Neural Network Model**

Laith S. Sabri | Abbas J. Sultan (Missouri University of Science and Technology, USA); Muthanna H. Al-Dahhan (University of Missouri Science and Technology (USA); Cihan University-Erbil (Iraq)

3:45 .m. – 5:30 p.m.

### **Session 4 – Deep Learning and Data Analysis II**

*Chair: Nevrez Imamoglu*

*National Institute of Advanced Industrial Science and Technology (Japan)*

#### **Unsupervised Learning of Polychronous Wavefront Computation Configurations for Pattern Recognition**

Fred Highland (University of Maryland Baltimore County, USA)

#### **Unsupervised Machine Learning by Graph Analytics on Heterogeneous Network Device Data**

Jeffery S. Lin | Erhan Guven | Lien T. Duong | Matthew D. Dinmore | Paul A Hanke | Beth G. Magem | Jeffery S. Chavis (John Hopkins University, USA)

#### **Adversarial Attacks and Defenses Against Deep Neural Networks: A Survey**

Mesut Ozdag (University of Central Florida, USA)

#### **Exploring Recurrent and Feedback CNNs for Multi-Spectral Satellite Image Classification**

Nevrez Imamoglu | Pascual Martínez-Gómez | Ryuhei Hamaguchi | Ken Sakurada | Ryouyusuke Nakamura (National Institute of Advanced Industrial Science and Technology (AIST), Japan)

#### **Customer Perception Analysis Using Deep Learning and NLP**

Sridhar Ramaswamy | Natalie DeClerck (Caterpillar Inc, USA)

**Tuesday, November 6, 2018**

10:15 a.m. – 12:00 p.m.

**Session 5 – Cluster Analysis and Prediction II**

*Chair: Hamid R. Darabi*

*Remedy Partners (USA)*

**Forecasting Mortality Risk for Patients Admitted to Intensive Care Units Using Machine Learning**

Hamid R. Darabi | Daniel Tsinis | Kevin Zecchini | Winthrop F. Whitcomb | Alexander Liss (Remedy Partners, Inc., USA)

**Near Field Communication Detection System for Drug-Drug Interactions**

Amjed B. H. Altaweel (Al-Nahrain University, Iraq); Loay Abusalah; Dima M.Qato (University Of Illinois at Chicago, USA)

**Using Accuracy Measure for Improving the Training of LSTM with Metaheuristic Algorithms**

Tarik A. Rashid | Polla Fattah (University of Kurdistan Hewler, Iraq; Salahaddin University-Erbil, Iraq); Delan K. Awla (University of Kurdistan Hewler, Iraq)

**Analysis of Parkinson's Disease Data**

Ram Deepak Gottapu | Cihan H. Dagli (Missouri University of Science and Technology, USA)

**Robust Virtual Welding Process Optimization**

Vijay K. Yalamanchili | Diego A. Galindo | Justin C. Mach (Caterpillar Inc, USA)

1:30 p.m. – 3:15 p.m.

**Session 6 – Cyber Physical Systems II**

*Chair: Chandru Mirchandani*

*George Washington University (USA)*

**Text Mining to Understand the Influence of Social Media Applications on Smartphone Supply Chain**

Aditya Akundi | Bill Tseng (University of Texas at El Paso, USA); Jiamin Wu (Shantou University, China); Eric Smith (University of Texas at El Paso, USA); Subbalakshmi M | Francisco Aguirre (University of Texas at El Paso, USA)

**Social Media Analysis of User's Responses to Terrorism Using Sentiment Analysis and Text Mining**

Samah Mansour (Grand Valley State University, USA)

**Sensor Based Human Activity Recognition Using Adaboost Ensemble Classifier**

Abdulhamit Subasi | Dalia H. Dammas | Rahaf D. Alghamdi | Raghada A. Makawi | Eman A. Albiety | Tayeb Brahimi | Akila Sarirete (Effat University, Saudi Arabia)

**Visualizing High Dimensional and Big Data**

Amy Genender-Feltheimer (Caterpillar Inc., USA)

**Adaptive Software Reliability Growth**

Chandru Mirchandani (George Washington University, Washington D. C., USA)

## **Session 7 – Cluster Analysis and Prediction III**

*Chair: Mika Sato-Ilic*

*University of Tsukuba (Japan)*

### **Homogeneous Cluster Analysis**

Mika Sato-Ilic (University of Tsukuba, Japan)

### **Evolutionary Clustering Algorithms for Relational Data**

Amit Banerjee | Issam Abu-Mahfouz (Pennsylvania State University, USA)

### **Asymmetric MDS with Categorical External Information Based on Radius Model**

Kensuke Tanioka (Wakayama Medical University, Japan); Hiroshi Yadohisa (Doshisha University, Japan)

### **An Application Study of DNA Structural Properties for Promoter Prediction with Wavelet and Support Vector Machine**

Makihiko Sato (Maebashi Institute of Technology, Japan)

### **Real-Time Classification of Earthquake Using Deep Learning**

H. Serdar Kuyuk | Ohno Susumu (Tohoku University, Japan)

## **Wednesday, November 7, 2018**

9:00 a.m. – 10:45 a.m.

## **Session 8 – Cyber Physical Systems III (Ontario B)**

*Chair: Nil Kilicay-Ergin*

*Pennsylvania State University (USA)*

### **Ranking Critical Activities in Process Architectures**

Satish M Srinivasan | Nil Kilicay-Ergin | Raghvinder S. Sangwan | Colin J. Neill (Penn State University, USA)

### **A Three-Choice Minority Game Model with Homogeneous Agent Preferences for Resource Allocation**

Catalina A. Montes | Adrian Roy L. Valdez (Scientific Computing Laboratory, University of the Philippines-Diliman, Philippines)

### **Anomaly Detection in Vehicle Traffic with Image Processing and Machine Learning**

Selim S. Sarikan | A. Murat Ozbayoglu (TOBB University of Economics and Technology, Turkey)

### **DSCR Based Sensor-Pooling Protocol for Connected Vehicles in Future Smart Cities**

Mostafa El-Said | Samah Mansour | Vijay Bhuse (Grand Valley State University, USA)

### **Solving Stochastic Shortest Distance Path Problem by Using Genetic Algorithms**

Ehsan Ahmadi | Gürsel A. Süer | Farah Al-Ogaili (Ohio University, USA)

11:00 a.m. – 12:45 p.m.

**Session 9 – Deep Learning and Data Analysis III**

*Session Chair: Gürsel A Süer,  
Ohio University (USA)*

**Effect of Flash Stimulation for Migraine Detection Using Decision Tree Classifiers**

Abdulhamit Subasi (Effat University, Saudi Arabia); Aysha Ahmed (Effat University, Saudi Arabia); Emina Alickovic (Linkoping University, Sweden)

**Automated EMG Signal Classification for Diagnosis of Neuromuscular Disorders Using DWT and Bagging**

Abdulhamit Subasi (Effat University, Saudi Arabia); Emine Yaman (International University of Sarajevo, Bosnia and Herzegovina); Yara Smaily | Halah A. Alynabawi | Fatemah Alobaidi | Sumaiah Altheibani (Effat University, Saudi Arabia)

**Real-time Detection of Human Falls in Progress: Machine Learning Approach**

Gursel Serpen | Rakibul Hasan Khan (University of Toledo, USA)

**The 2015-2017 Cape Town Drought: Attribution and Prediction Using Machine Learning**

Michael B. Richman (University of Oklahoma, USA); Lance M. Leslie (University of Technology Sydney, Australia)

**Surface Roughness Prediction in Turning Using Three Artificial Intelligence Techniques; A Comparative Study**

Issam Abu Mahfouz | AHM Esfakur Rahman | Amit Banerjee (Penn State University Harrisburg, USA)

**Early Detection of Disease Using Electronic Health Records and Fisher's Wishart Discriminant Analysis**

Sijia Yang | Licheng Wang (Beijing Univ. of Posts and Telecommunications, China); Jian Bian | Zeyi Sun | Xiaoyi Xiong | Yu Li (Missouri University of Science and Technology, USA); Haojin Zhu (Shanghai Jiaotong University, China)