Tuesday, October 15

8:45a Welcome and Workshop Overview

9:00a Keynote: Joint Artificial Intelligence Center
Dr. Jill Crisman, Chief Scientist and Chief Technical Officer, Joint Artificial Intelligence Center, JAIC

Session I Human – Machine Collaboration – Chair: K. Palaniappan

9:50a T8: Adaptive Online Learning for Human-Robot Teaming in Dynamic Environments
Alexander D Wissner-Gross (Harvard University)*; Noah Weston (US ARMY CERDEC); Manuel Vindiola (Nil)

10:10a T31: Fast Recognizable Robot State Estimation with Onboard Visual Sensors
Lantao Liu (Indiana University, Intelligent Systems Engineering)*; Zheng Chen (Indiana University)

10:30a T26: Surgery Task Classification using Procrustes Analysis
Safaa Albasri (University of Missouri-Columbia)*; Mihail Popescu (University of Missouri-Columbia); James Keller (University of Missouri, Columbia, USA)

10:50a Coffee Break

11:10a T19: Implicit Land Use Mapping Through Geotagged Imagery
Connor S Greenwell (University of Kentucky)*; Scott Workman; Nathan Jacobs (University of Kentucky)

11:30a T40: Decentralized Bayesian Anomaly Detection with Extreme Value Theory
George Stantchev (Naval Research Laboratory)*

Taher Hajilounezhad (University of Missouri-Columbia); Zakariya A Oraibi (University of Missouri - Columbia); Ramakrishna Surya (University of Cincinnati); Filiz Bunyak (University of Missouri-Columbia); Matthew Maschmann (University of Missouri-Columbia); Prasad Calyam (University of Missouri-Columbia); Kannappan Palaniappan (University of Missouri)*

12:10p Lunch Break

Session II Geospatial Cloud Analytics – Chair: John Irvine

1:30p Invited Speaker: Learning Massively Scale Computer Vision Deep Models
Dr. Jiang Wang Google Cloud AI

2:10p T41: Deep Nets Spotlight Illegal, Unreported, Unregulated Fishing
Darrell Young (Raytheon)*

2:30p T43: Automated Monitoring of Oil & Gas Activity from Remotely Sensed Data
Krishna Karra (Descartes Labs)*

Austen Groener (Lockheed Martin)*; Gary Chern (Lockheed Martin); Mark Pritt (Lockheed Martin)

3:10p T46: Quantifying Socio-economic Context from Overhead Imagery
Brigid Angelini (Draper)*, Michael R. Crystal (Draper), John M. Irvine (Draper)

3:30p Coffee Break

3:50p T38: Time Series Analysis of Sentinel-1 Synthetic Aperture Radar Imagery for Detection of Vehicles
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and Equipment
Michael Harner (Lockheed Martin)*; Austen Groener (Lockheed Martin); Mark Pritt (Lockheed Martin)

John M. Irvine (Draper) *, Joshua Nolan (Draper), Nathaniel Hofmann (Draper), Dale Lewis (COMACO), Twakundine Simpamba (Department of National Parks and Wildlife, Zambia), Alexander J. Travis (Cornell), Sheila Hemami (Draper)

4:30p T51: ALIAS: Automated Labeling for Interactive Assisted Segmentation
Philip Sallee (Raytheon)*, Stephen Raif (Raytheon), James Talamonti (Raytheon)

5:30p Poster Session I (Long Gallery)
- P10: Improving Industrial Safety Gear Detection through Re-ID conditioned Detector - Manikandan R (R&D Center, Hitachi India Pvt Ltd)*; Shibashish Sen (R&D Center, Hitachi India Pvt. Ltd)
- P42: Evaluation of Generative Adversarial Networks Performance Based on Direct Analysis of Generated Images - SHUYUE GUAN (George Washington University)*; Murray Loew (George Washington University)
- P36: Detection and Removal of Salt and Pepper Noise by Gaussian Membership Function and Guided Filter - Ashish Kumar (Indian Institute of Technology Kanpur, India); Teena Sharma (Indian Institute of Technology Kanpur, India)*; Dr. Nishchal K Verma (Indian Institute of Technology Kanpur, India); Pradip SirCAR (Indian Institute of Technology Kanpur); Shantaram Vasikarla (California State University, Northridge, CA)
- P4: Using Brain MRI Images to predict Memory, BMI & Age - Chhavi Yadav (NYU)*
- P7: Automated Segmentation of Nucleus, Cytoplasm and Background of Cervical Cells from Pap-smear Images using a Trainable Pixel Level Classifier - Wasswa William (Mbarara University of Science and Technology)*; Annabella Habinka (Makerere University); Johnes Obungoloch (Department of Biomedical Sciences and Engineering, Mbarara University of Science and Technology, Mbarara); Andrew Ware (University of South Wales, Prifysgol)
- P24: Single-Period Single-Frequency Visualization of EEG Striatal Beat Frequency - James P LaRue (Jadco Signals)*
- P29: Deep learning based Integrated classification and image retrieval system for early skin cancer detection - Mahmudur M Rahman (Morgan State University)*; Tasmeer Alam (Morgan State University); Oyebisi Layode (Morgan State University)
- P3: Deep Learning Framework for Single and Dyadic Human Activity Recognition - Tej Singh (Delhi Technological University Delhi)*; Shivam Rustagi (Delhi Technological University Delhi); Aakash Garg (Delhi Technological University Delhi); Dinesh K Vishwakarma (DTU)
- P22: Using Robust Networks to Inform Lightweight Models in Semi-Supervised Learning for Object Detection - Jonathan Worobey (SURVICE Engineering)*
- P33: PSIG-GAN: A Parameterized Synthetic ImageGenerator Optimized via Non-Differentiable GAN - Jake Bezold (The College of New Jersey); Hussain Khajanchi (The College of New Jersey); Matthew Kilcher (The College of New Jersey); Skyler Maxwell (The College of New Jersey); Larry Pearlstein (The College of New Jersey)*
- P9: Adapting Image Representations for Occluded Face Verification via Reference Conditioned Low-Rank Projection - Manikandan R (R&D Center, Hitachi India Pvt Ltd)*; Shibashish Sen (R&D Center, Hitachi India Pvt. Ltd)
Wednesday, October 16

9:00a  **Keynote: Key Challenge Problems at NGA Research**
Dr. Cindy Daniell, Director NGA Research

Session III  **Machine Learning and Feature Extraction – Chair: Steven Israel**

9:50a  T21:  *Exploring Efficient and Tunable Convolutional Blind Image Denoising Networks*
Martin T Jaszewski (NIWC Pacific)*; Shibin Parameswaran (Naval Information Warfare Center Pacific)

10:10a  T32:  *Globally-scalable Automated Target Recognition (GATR)*
Gary Chern (Lockheed Martin); Austen Groener (Lockheed Martin); Michael Harner (Lockheed Martin); Tyler Kuhns (Lockheed Martin); Andy Lam (Lockheed Martin); Mark Pritt (Lockheed Martin)*

10:30a  T48:  *Exploiting Autoencoders for Image Processing Applications*
Avi Mehta (Raytheon)*, Steven A. Israel (Raytheon), Franklin Tanner (Raytheon), Philip Sallee (Raytheon)

10:50a  **Coffee Break**

11:10a  T12:  *Semantic Segmentation of Clouds in Satellite Imagery Using Deep Pre-trained U-Nets*
Cindy Gonzales (Lawrence Livermore National Laboratory)*; Wesam Sakla (LLNL)

11:30a  T15:  *What’s the Point? Using Extended Feature Sets with Sparse Lattice Networks for Semantic Segmentation in Point Clouds*
Nina Varney (University of Dayton)*; Vijayan K Asari (University of Dayton)

11:50a  P27:  *Reference Vector Space for Multi-Modal Embeddings*
Sabarish Gopalakrishnan (RIT (KGCOE))*; Premkumar G Udaiyar (Rochester Institute of Technology); Shagan Sah (Rochester Institute of Technology); Raymond Ptucha (Rochester Institute of Technology)

12:10p  **Lunch Break**

1:30p  **Keynote: Teaching Perspective and Commander’s Intent**
COL (Retired) Michael Fazen – US Army now CACI

Session IV  **Video and Photogrammetry – Chair: James Aanstoos**

2:10p  T11:  *4-D Scene Alignment in Surveillance Video*
Patrick Feeney (Vision Systems, Inc.)*

2:30p  T18:  *SRC3: A Video Dataset for Evaluating Domain Mismatch*
Jonathan Sato (Naval Information Warfare Center Pacific)*; Chelsea Mediavilla (Naval Information Warfare Center Pacific); Chris M. Ward (Shield AI); Shibin Parameswaran (Naval Information Warfare Center Pacific)

2:50p  T30:  *Semantic Video Compression Using Multi-Cue Vehicle Detection on Aerial Videos*
Noor M Al-Shakarji (University of Missouri Columbia)*; Filiz Bunyak (University of Missouri-Columbia); Gunasekaran Seetharaman (The US Navy ONR); Kannappan Palaniappan (University of Missouri)

3:10p  T52:  *The Urban Semantic 3D Dataset and 2019 Data Fusion Contest*
Myron Brown (JHU APL)*, Hirsh Goldberg (JHU APL)

3:30p  **Coffee Break**

3:50p  T17:  *GLSNet: Global and Local Streams Network for 3D Point Cloud Classification*
Rina Bao (University of Missouri-Columbia)*
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4:10p  T20:  Sensitivity of Multiview 3D Point Cloud Reconstruction to Compression Quality and Image Feature Detectability
Ke Gao (University of Missouri-Columbia)*; Shizeng Yao (University of Missouri-Columbia); Hadi Aliakbarpour (University of Missouri-Columbia); Sanjeev Agarwal (US Army Research); Guna Seetharaman (US Naval Research Lab); Kannappan Palaniappan (University of Missouri)

4:30p  T49:  Enhancing Object Detection and Recognition via Reinforcement Learning
Paul Hershey (Raytheon)*

4:50p  A Tour of the Cosmos Club by Don Gerson (starts from the Powell Room)
Mr. Gerson is a trained, experienced Docent for the Club, and has given tours for the last 15 years. The tour will include several of the most interesting rooms, explain recent renovations, discuss the history of the Townsend Mansion, home to the Club since 1951, as well as the history of the Cosmos Club itself. He will be pleased to answer questions. The tour should take about 30 minutes, so there will be plenty of time to view the poster sessions, and enjoy the pre-banquet reception.

5:30p  Poster Session II (Long Gallery)
- P13:  3-D Scene Reconstruction Using Depth from Defocus and Deep Learning  - Dave R Emerson (IUPUI)*; Lauren Christopher (Indiana University-Purdue University Indianapolis)
- P25:  Efficient Passive Sensing Monocular Relative Depth Estimation  - Alex Yang (University of Missouri); Grant J Scott (University of Missouri)*
- P2:  Inventory Management using KAZE Features Under Different Lighting Conditions  - Teena Sharma (Indian Institute of Technology Kanpur, India)*; Astha Jain (Indian Institute of Technology Kanpur, India); Dr. Nishchal K Verma (Indian Institute of Technology Kanpur, India); Shantaram Vasikarla (California State University, Northridge, CA)
- P6:  Adaptive Fluorescence Pixels Control in Visibility Refinement through CSA  - Sangita Roy (Narula Institute of Technology)*; Sheli Sinha Chaudhuri (Jadavpur University)
- P14:  Pre-Si Use-Case Analysis and Decomposition Methodology for Video Analytics Workloads  - Asaad F. Said (Intel)*
- P16:  Online Masking of Packet-Loss Blocks in Streaming Video  - Rumana Aktar (University of Missouri-Columbia)*; Kannappan Palaniappan (University of Missouri); Jeffrey Uhlmann (University of Missouri-Columbia)
- P34:  Internet of Things Anomaly Detection using Machine Learning  - Soundararajan Ezekiel (IUP)*; Larry Pearlstein (The College of New Jersey)
- P50:  Comparing the Effects of Annotation Type on Machine Learning Detection Performance  - James Mullen (Raytheon)*, Franklin Tanner (Raytheon), Philip Sallee (Raytheon)
- P39:  Mitigating the Low/No-shot Problem in Deep Learning With Synthetically Generated Satellite Imagery  - Emily E Berkson (Lockheed Martin)*; Jared VanCor (Lockheed Martin); Steven Esposito (Lockheed Martin); Gary Chern (Lockheed Martin); Mark Pritt (Lockheed Martin)

7:30p  Banquet
Keynote (~8:30pm):  The conservation of certain iconic paintings and murals - Engineering, analysis and an objective interpretation
Mr. David Olin
Thursday, October 17

Session V  Medical – Chair: Don Gerson

8:30a  T28:  Parasite Detection in Thick Blood Smears Based on Customized Faster-RCNN
Feng Yang (NLM, NIH)*; Stefan Jaeger (National Institutes of Health)

8:50a  T44:  Segmentation of Infrared Breast Images Using MultiResUnet Neural Networks
Ange Lou (The George Washington University)*; Shuyue Guan (The George Washington University); Nada Kamona (GWU); Murray Loew (George Washington University)

9:10a  Keynote: Towards Automatic and Explainable Data Science for NASA
Dr. Chris Mattmann, Deputy Chief Technology and Innovation Officer (CTIO) NASA JPL

9:55a  Coffee Break

Session VI  Interpretable AI/ ML – Chair: Prudhvi Gurram and Supriyo Chakraborty

10:10a  T59:  Fooling Network Interpretation in Image Classification
Hamed Pirsiavash (University of Maryland, Baltimore County)*

10:30a  T60:  Interpretation of Convolutional Neural Networks via Successive Subspace Learning
C.-C. Jay Kuo (University of Southern California)*

10:50a  T61:  AIX360: An open source toolkit of AI Explainability Techniques
Karthikeyan Shanmugam (IBM Research AI)*

11:10a  T62:  Grounding Deep Models for Improved Decision Making
Sarah Adel Bargal (Boston University)*

11:30a  T63:  Micro-vs-Macro Explainability: What kind is needed and how can it fail?
Ed Raff (Booz Allen Hamilton)*

11:50a  Lunch Break

1:00p  Tutorial: Visual Deep Learning: Current Status and Future Outlook