

2018

MACHINE LEARNING IN SCIENCE AND ENGINEERING

POSTER SESSIONS - JUNE 6

BME / Healthcare Informatics

- Greeshma Agasthya (Geisinger) - *"A machine Learning approach to understanding the importance of echo strain measurements in cardiac outcomes research"*
- Kathleen Bates (Georgia Tech) - *"Expanding the behavior space of the worm"*
- Arna Ghosh (McGill University) - *"Hierarchical Deep Convolutional Network for Analysis of Motor task EEG Data"*
- Dimitrios Iakovakis (Aristotle University of Thessaloniki, Greece) - *"A machine learning-based approach to detect Parkinson's Disease from keystroke dynamics data captured in-the-wild"*
- Josue Orellana (CMU) - *"Torus Graphs for Multivariate Phase Coupling Analysis"*
- Surya Prasath (Cincinnati Children's Hospital Medical Center) - *"Automatic disease stage classification of brain glioblastoma multiforme histopathological images using deep convolutional neural networks."*
- Daniel Roudnitsky (University of Maryland) - *"Comparative Machine Learning Approaches for Parkinson's Disease Classification Using Acoustic Data"*
- Luna Zhang (BigBear) - *"Multi-function Convolutional Neural Networks for More Accurate Alzheimer's Disease Diagnosis Using Brain MRI Images than Traditional Convolutional Neural Networks"*

Chemical Engineering

- Ray Lei (Georgia Tech) - *"Data-driven Exchange-Correlation Functional Design and Visualization of Electronic Environments"*
- Jonathan Lym (University of Delaware) - *"Understanding the Active Site for CO₂ Conversion to Methanol"*
- Kevin Tran (CMU) - *"Active learning across intermetallics to guide discovery of electrocatalysts for CO₂ reduction and H₂ evolution"*

Chemistry

- Christopher Childs (CMU) - *"A Hierarchical Machine Learning Approach to Elucidate Interactions and Optimize Superplasticizers in High-Sulfate Cement"*
- Mojtaba Haghghatlari (University at Buffalo) - *"Software development and its application for predicting optical properties in molecular space"*
- Lee Joon-Yong (PNNL) - *"Deep Learning Benchmark Data for de novo Peptide Sequencing"*
- Xingyu Liu (CMU) - *"Accelerate searching for singlet fission materials: Feature selection and model construction for GW+BSE method with SISSO"*
- Mariya Popova (UNC) - *"De-novo drug design with deep reinforcement learning"*

Civil Engineering

- Sirajum Munir (Bosch Research) - *"Privacy and Context Aware Occupancy Sensing in Smart Buildings"*
- Zhiang Zhang (CMU) - *"A Deep Reinforcement Learning Approach to Using Whole Building Energy Model for Energy Efficient and Thermal Comfort Control of a Radiant Heating System"*

Electrical and Computer Engineering

- Ermao Cai (CMU) - *"Learning-based Power and Runtime Modeling for Convolutional Neural Networks."*
- William Melicher (CMU) - *"Fast, Lean, and Accurate: Modeling Password Guessability Using Neural Networks"*
- Huilian Qiu (CMU) - *"Social Capital and Sustained Participation in Open Source"*
- Sudha Tushara Sadasivuni (Georgia State University) - *"Online Mental Illness Detection Based on Continual Tweets Using Decision Trees"*

Engineering and Public Policy

- Allen Kristen (CMU) - *"Indirect identification of psychosocial risks during the perinatal period."*

Materials Science and Engineering

- Jennifer Bone (CMU) - *"Developing High-Fidelity 3D Printed Biomaterial Constructs Using Hierarchical Machine Learning and Bayesian Statistical Analysis"*
- Ardarsh Dave (CMU) - *"Generating Battery Electrolyte Data from First Principles"*
- Brian DeCost (NIST) - *"Dynamic experimental design for spatially-resolved electrochemical measurements"*
- Deepak Kamal (Georgia Tech) - *"Polymer Genome: A Data-powered Polymer Informatics Platform for Property Predictions"*
- Mahemaa Rajasekaran (CMU) - *"A Data driven approach to study the Fatigue life of Additively Manufactured IN718 under varied Process parameters"*

Mechanical Engineering

- Zhiyang Yu (ETH) - *"Machine learning based regression model for multi-materials artificial spinal disc optimization"*
- Xiaowei Yue (Georgia Tech) - *"Engineering-Driven Data Analytics for In-Situ Process Monitoring of Nanomanufacturing"*

Physics

- Stef Garasto (Imperial College) - *"Deep learning for physical systems: next-steps prediction and parameter inference"*

POSTER SESSIONS - JUNE 7

BME / Healthcare Informatics

- Solomon Abiola (University of Rochester) - *“Node: A Network Based Approach to Infectious Disease Modelling in Real-time During the Lagos, Nigeria Ebola Outbreak Using mHealth”*
- Shivesh Chaudhary (Georgia Tech) - *“Automatic identity determination of neurons in whole-brain recordings using Conditional Random Fields”*
- Alvaro Ulloa (Geisinger) - *“Electronic Health Records Simulation Framework for Unsupervised Clustering”*
- Yuanda Zhu (Georgia Tech) - *“Prediction of Heart Transplant Rejection Using Histopathological Whole-Slide Imaging”*

Chemical Engineering

- Jinchao Feng (University of Massachusetts Amherst) - *“Model-Form Uncertainty Quantification in Fuel Cell Design”*
- Dilip Krishnamurthy (CMU) - *“Machine Learning Generalized Geometric Descriptors for Oxygen Reduction Activity on Transition Metal Sulfides”*
- Aini Palizhati (CMU) - *“Using Data Science to Reduce Large Reaction Networks in Catalysis”*
- Hemanth Pillai (Virginia Polytechnic Institute) - *“A Machine Learning Model for Accelerating Biomimetic Electrocatalyst Discovery”*
- Jiamin Wang (Virginia Polytechnic Institute) - *“Machine Learning Molecular Dynamics for Understanding Nonadiabatic Surface Reactions”*
- Junwoong Yoon (CMU) - *“Surfactant Design with Molecular Simulations and Machine Learning”*
- Jiazhou Zhu (Clemson University) - *“Expanding Methods from Computationally-Driven Design of Catalysts to Designing Advanced Materials”*

Chemistry

No presentations during this session

Civil Engineering

- Fabricio Flores (CMU) - *“People counting in indoor environments for improving energy efficiency of HVAC systems”*
- Jingxiao Liu (CMU) - *“A Damage Localization and Quantification Algorithm for Indirect Structural Health Monitoring of Bridges Using Multi-Task Learning”*
- Zhen Liu (Michigan Technological University) - *“Deep Learning with Convolutional Neural Network for the Stability Analysis of Geosystems”*
- Ivan Mutis (Illinois Institute of Technology, Chicago) - *“On the Improved Estimation of Living Space Occupancy Using Human Poses Inferred with Computer Vision and Deep Learning to Automate Comfort Controls”*
- Yongjia Yu (Tsinghua University) - *“Improving the accuracy of near-real-time seismic loss estimation using post-earthquake remote sensing images and logistic classification method”*

Electrical and Computer Engineering

- Mark Blanco (CMU) - *“Reinforcement Learning for Thermal and Power Management in Mobile Multicore Systems”*
- Jeong Haewon (CMU) - *“Reliable Machine Learning Using Unreliable Components: From Matrix Operations to Neural Networks”*
- Ke-Jou Hsu (Georgia Tech) - *“Fast video processing on distributed edge with machine learning application”*
- Suyash Nigam (CMU) - *“PointVox: A deep learning framework to convert point-cloud representation to voxelized representation”*
- Arun Rajagopalan (Illinois Inst. Tech) - *“On the Improved Estimation of Living Space Occupancy using Human Poses Inferred with Computer Vision and Deep Learning to Automate Comfort Controls”*
- Dutta Sanghamitra (CMU)
- Yu Zhang - *“Wind Power Forecasting: A Joint Clustering and Regression Approach”*

Engineering and Public Policy

- Quay Amanda (CMU) - *“Predicting Agricultural Soil Salinity using Landsat Imagery in California’s San Joaquin Valley”*
- Patrick Funk (CMU) - *“The science of art-to-science: Expert judgment at the technical frontier and the case of metal additive manufacturing in aerospace”*
- Acharya Prithvi (CMU) - *“Machine Learning to Improve Vehicle Emissions Inspection Reliability”*

Materials Science and Engineering

- Andrew Castillo (Georgia Tech) - *“Bayesian Framework for the Estimation of the Single Crystal Parameters from Spherical Indentation Stress-Strain Measurements”*
- Patxi Fernandez-Zelaia (Georgia Tech) - *“TBD”*
- Sepideh Hashemi (Georgia Tech) - *“Process-structure linkage for static recrystallization of cubic materials”*
- Christopher Kantzos (CMU) - *“Use of Advanced Regression and Computer Vision Techniques for Evaluation of Process Parameter Modifications for Metal Additive Manufacturing”*
- Aditya Menon (CMU) - *“Understanding particle and solution variables for optimization of dispersant composition in pozzolan modified ordinary portland cement via gaussian process regression”*

Mechanical Engineering

No presentations during this session

Physics

- Michelle Ntampaka (Harvard University) - *“Probing the Epoch of Reionization with Convolutional Neural Networks”*

POSTER SESSIONS - JUNE 8

BME / Healthcare Informatics

- Anis Davoudi (University of Florida) - *“Characterizing Functional Status in Delirium Patients in the Intensive Care Unit Using Machine Vision Techniques”*
- Erik Jorgensen (Georgia Tech) - *“A sparse modeling framework for substructure prediction in the brain”*
- Octavio Mesner (CMU) - *“A nonparametric approach to variable selection applied to an observational clinical dataset”*
- Surya Prasath (Cincinnati Children’s Hospital Medical Center) - *“Microvasculature segmentation of arterioles using deep CNN”*
- Manar D Samad (Geisinger) - *“A Machine Learning Framework to Optimize Patient Outcome Predictions Using Large Electronic Health Records and Clinically Acquired Imaging Measurements”*
- Mahir Sudad (University of Maryland) - *“Predictive Diagnosis of EEG Data for ADHD Diagnosis Using Clustering Techniques”*

Chemical Engineering

No presentations during this session

Chemistry

- Mohammad Atif Afzal (University at Buffalo) - *“Harnessing virtual high-throughput screening and machine learning for the discovery of novel high-refractive-index polymers”*
- Xi Chen (Brown) - *“The application of machine learning in variational transition state theory”*
- Christopher Kotke (CMU) - *“Using Directed Acyclic Graphs for Cause Discovery in Molecular Dynamics”*
- Haichen Li (CMU) - *“Using deep reinforcement learning to guide chemical reactions”*
- Derek Metcalf (MSU) - *“Using Bayesian neural networks to understand uncertainty in model neural network chemistry predictions”*
- Holden Parks (CMU) - *“Quantifying uncertainty in first-principles predictions of molecular vibrational frequencies with applications to machine learning”*
- Chen Qu (Emory) - *“Assessing the Gaussian process approach in potential energy surface fitting”*
- Timothy Rose (CMU) - *“Evolutionary niching in the Gator genetic algorithm for molecular crystal structure prediction”*

Civil Engineering

No presentations during this session

Electrical and Computer Engineering

No presentations during this session

Engineering and Public Policy

No presentations during this session

Materials Science and Engineering

- Matthew Barry (Georgia Tech) - *“Machine Learning for the Prediction of Atomic Displacement Energies”*
- Tim Hsu (CMU) - *“High-Performance Computation of Local Electrochemistry in Heterogeneous Solid Oxide Fuel Cell Microstructures”*
- David Montes de Oca Zapiain (Georgia Tech) - *“Prediction of the plastic response of polycrystalline materials subjected to a periodic boundary condition using Material Knowledge Systems.”*
- James Peerless (NC State) - *“Uncertainty Quantification of Atomistic Partial Charges in Liquid Phase Molecular Dynamics”*
- Apaar Shankar (Georgia Tech) - *“Materials Knowledge Systems in Python (PyMKS) – An Open Source Data Science Framework for Accelerated Development of Hierarchical Materials”*

Mechanical Engineering

- Harsh Gehani (CMU) - *“Topology Optimization using Neural Networks”*
- Haoliang Jiang (CMU) - *“Data-driven method for fast design of complex 3D models”*
- Rahi Patel (CMU) - *“Convolutional neural network (MsCNN) applied to find defects in powder spreading in an additive manufacturing process”*
- Ayush Raina (CMU) - *“Utilizing Hidden Markov Models to represent design strategy and its transfer in cognition-based design agents”*
- Wentai Zhang (CMU) - *“3D Shape Abstract and Style Transfer Using Deep Learning”*

Physics

No presentations during this session