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 Haghhighatlari (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”
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”
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”
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

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

Electrical and Computer Engineering

No presentations during this session

Engineering and Public Policy

No presentations during this session