Intermountain Engineering, Technology, and Computing Conference I-ETC 2020
Conference Virtual Sessions

Engineering Track:

ENG1: Sensing (Session Chair: Ehsan Rohani; Utah Valley University; Ehsan.Rohani@uvu.edu)

Paper No.	Paper Title
Invited Talk (30 Minutes)	**Optical fiber sensing in harsh environments** **Professor Stephen Schultz (Brigham Young University)**
1570632857	*Surface Detection of Semi-Transparent Media Through Modified Confocal Microscopy*
1570624197	*Implementation and Survivability of Fiber Optic Sensing in Body Armor*
1570631043	*Body Armor Shape Sensing Using Fiber Bragg Gratings*
1570632858	*Automated Control of a Femtosecond Laser Along the Surface of a Planar Sample*

ENG 2: Signal/Image Processing (Session Chair: Mohammad Shekaramiz; Utah Valley University; MShekaramiz@uvu.edu)

Paper No.	Paper Title
Invited Talk (30 Minutes)	**Introduction to Polar Codes** **Professor Todd Moon (Utah State University)**
1570629908	*Phase Effects on Speech and Its Influence on Warped Speech*
1570635900	*Satellite Image Classification Using LC-KSVD Sparse Coding*
1570632091	*Recognizing Fractal Behavior in Jackson Pollock Artwork Through Computer Vision*

ENG 3: Renewable/Sustainable Energy and Smart Grid I (Session Chair: Paul Moses; University of Oklahoma; pmoses@ou.edu)

Paper No.	Paper Title
Invited Talk (30 Minutes)	**Artificial Intelligence for Enhancing the Cyber-Physical Resilience of Power Distribution Systems ; Associate Professor Masood Parvania (University of Utah)**
1570632702	*Placement and Sizing of EV Charging Stations According to Centrality of the Underlying Network*
1570634149	*Various Structures and Control Strategies for Provisional Energy Transaction Management in Coupled Microgrid Clusters*
1570623003	*Adaptive Protection System Using Neutral Currents Studies and Load Estimation*

ENG 4: Machine Learning and Signal Processing (Session Chair: Todd Moon; Utah State University; todd.moon@usu.edu)

Paper No.	Paper Title
Invited Talk (30 Minutes)	**Compressive Sensing and its applications** **Assistant Professor Mohammad Shekaramiz (Utah Valley University)**
1570632697	*Compressive Sensing via Variational Bayesian Inference*
1570635045	*A Machine Learning Based Framework for the Smart Healthcare Monitoring*
1570632932	*Do Empirical and Abstract Shannon Entropies Converge in Value? A Case in RNA Molecular Structure*
1570632460	*Visualizing Air Voids and Synthetic Fibers from X-Ray Computed Tomographic Images of Concrete*

ENG 5: Education in Engineering (Session Chairs: Krista Ruggles; Utah Valley University; kruggles@uvu.edu)

Paper No.	Paper Title
1570633797	*SeedPOD: An Effective Vehicle for Engineering and Technology Education*
1570632842	*Toward the Development of Capstone Design Guidelines in Newly Established Engineering Programs*
1570632852	*Cost Effective Mobile Robots Navigation and Mapping System for Education*
1570632906	*Incorporating Cybersecurity in Undergraduate Mechatronics Engineering Technology Education*
1570627104	*Stereophonic Frequency Modulation Using MATLAB: An Undergraduate Research Project*
1570632898	*Self-Driving Cars: A Platform for Learning and Research*
1570635818	*Teaching Computation in Introductory Physics*

ENG 6: Design and Infrastructure Resilience (Civil & Environmental Engineering) (Session Chair: Amanda Bordelon; Utah Valley University; Amanda.Bordelon@uvu.edu)

Paper No.	Paper Title
1570632941	*Mechanistic-Empirical Pavement Design for Minor Collector Streets Incorporating Cement-Treated Base Layers*
1570632907	*Mitigation of Cracking in Concrete Bridge Decks Using Twisted Steel Micro-Rebar*
1570632934	*Interruption of the Aggregate Matrix by Geogrid Reinforcement in Resilient Modulus Testing*
1570635909	*Soil-Water Characteristic Curves for Clayey Soil Treated with Cement or Lime*
1570632819	*Sustainable Debris Basins for Post-Fire Protection*
1570632950	*Influence of Personal Relationships on Selection of Civil Engineering as a Career*

ENG 7: Autonomous Systems, Modeling, Design and Control (Session Chair: Afsaneh Minaie; Utah Valley University; MINAIEAF@uvu.edu)

Paper No.	Paper Title
1570623482	*Autonomous Navigation of an Agricultural Robot Using RTK GPS and Pixhawk*
1570623487	*Chassis Design and Analysis of an Autonomous Ground Vehicle (AGV) Using Genetic Algorithm*
1570632870	*Additive Manufacturing Drone Design*
1570624088	*Jet Engine Modeling and Control Using T-MATS*
1570624087	*Parameter Identification and Fuzzy Logic Controller Design for a One-Stage Axial Flow Compressor System Based on Moore-Greitzer Model*
1570632658	*Acceleration, Braking, and Steering Controller for a Polaris Gem E2 Vehicle*

ENG 8: Renewable/Sustainable Energy and Smart Grid II (Session Chair: Matthew J Jensen; Utah Valley University; Matt.Jensen@uvu.edu)

Paper No.	Paper Title
1570632787	*MV/LV Overhead Transformer Monitoring and Hot Spot Temperature Estimation*
1570631673	*Small Signal Stability of a Series Compensated Microgrid Operating in Islanded Mode*
1570621792	*Identification of Smart Grid Attacks via State Vector Estimator and Support Vector Machine Methods*
1570630997	*Integration of Energy Storage and Pulsed-Power Technologies in Shipboard Power Systems*

ENG 9: Electronics (Session Chair: Stephen Schultz; Brigham Young University; schultz@byu.edu)

Paper No.	Paper Title
1570631426	*A Verified Simulation Method for Image Charge Detection with Non-cylindrical Electrodes*
1570634748	*Noise Resistant Full Adder Using DNA Strands*
1570632757	*Design of Common-Mode Feedback for High-Gain Charge Amplifier*
1570632031	*Progress Toward Airborne GPS Spatial Filtering Powered by Recent Advances in FPGA Technology*

ENG 10: Communications, Massive MIMO and 5G (Session Chair: Willie Harrison; Brigham Young University; willie.harrison@byu.edu)

Paper No.	Paper Title
1570632689	*Who's on First in 5G Mobile Networks: Equalizers or Polarization Diversity Combiners?*
1570624199	*Geolocation on the University of Utah POWDER 5G Testbed*
1570631466	*Future of Free Space Communication Systems (FSCS): An Overview*
1570635870	*Hyper Secure Cognitive Radio Communications in an Internet of Space Things Network Based on the BB84 Protocol*

ENG 11: Microfabrication (Session Chair: Rose Q. Hu; Utah State University; rose.hu@usu.edu)

Paper No.	Paper Title
1570632886	*Nanoscale Electrostatic Membrane Actuation for Nanofluidic Pumping*
1570632855	*Micromachining of Silicon Carbide Using Wire Electrical Discharge Machining*
1570632938	*Self-sustaining 3-Dimensional Thin Liquid Films in Ambient Environments*
1570632859	*Silicon Micro Gas Chromatography with Silk Screen Heater and Polyimide Capillary Insertion*

ENG 12: Construction and Materials Investigation (Civil and Environmental Engineering) (Session Chairs: Abdennour Seibi; Utah Valley University; ASeibi@uvu.edu)

Paper No.	Paper Title
1570635565	*Waste Glass Dust to Reduce Alkali Silica Reaction*
1570632720	*Correlating Aggregate Polish Susceptibility to Limestone Concentration Using X-Ray Diffraction*
1570632930	*Effect of Consolidation Effort on Mechanical Properties of Field-Mixed Polyester Polymer Concrete for Bridge Deck Overlays*
1570632864	*Cement Slurry Application Using a Ready-Mixed Concrete Truck: Best Practices for Urban Pavement Construction*
1570631416	*Reducing the Relative Error Between the Experimental and Numerical Results of a Pipeline Leak Flowrate Using a Lean Six-Sigma Based Approach*

Computing Track:

COM I: Data Science and Machine Learning I (Session Chair: Waseem Sheikh; Utah Valley University; Waseem.Sheikh@uvu.edu)

Paper No.	Paper Title
1570631020	*A Speech Emotion Recognition Solution Based on Support Vector Machine for Children with Autism Spectrum Disorder to Help Identify Human Emotions*
1570632853	*Research Paper Classification Using Supervised Machine Learning Techniques*
1570632722	*Machine Learning Pipeline for Shift-Invariant Detection of Volcanoes on Venus*
1570631471	*Software Architecture for Machine Learning in Personal Financial Planning*

COM 2: Data Science and Social Media (Session Chair: Soukaina Boubrahim; Utah State University; soukaina.boubrahimi@usu.edu)

Paper No.	Paper Title
1570631671	*HeyLo: Visualizing User Interests from Twitter Using Emoji in Mixed Reality*
1570632835	*Twitter-based Big Data Analytics for Disaster Alerts: TAGS (Twitter Alert Generation System)*
1570632850	*A Data Science Expert Social Network: From Personal Follower List to Social Network Structure*
1570631666	*Tweet-Inspired Intelligent Subselection of Semantically-Related Lyrical Training Data*

COM 3: Data Science and Machine Learning II (Session Chair: Paul Bodily; Idaho State University; bodipaul@isu.edu)

Paper No.	Paper Title
1570632891	*Herpetofauna Species Classification from Images with Deep Neural Network*
1570623518	*Offline Handwriting Recognition Pipeline Testing Tool*
1570632893	*Chi-Squared Based Feature Selection for Stroke Prediction Using AzureML*

COM 4: Computer System and Algorithms I (Session Chair: Shuhan Yuan; Utah State University; Shuhan.Yuan@usu.edu)

Paper No.	Paper Title
1570619582	*An Approach Towards Merging Grammars*
1570620854	*Grammar Normalization to Support Automated Merging*
1570631699	*Probabilistic Generation of Sequences Under Constraints*
1570630881	*Impact of Quantum Values on Multilevel Feedback Queue for CPU Scheduling*

COM 5: Software Engineering and User Experience (Session Chair: Jingpeng Tang; Utah Valley University; JTang@uvu.edu)

Paper No.	Paper Title
1570626200	*Teaching Systems Thinking as a Foundation of Scrum*
1570632892	*Visualization of Requirements to Software Architecture Component Mappings*
1570633591	*A Model-View-View-Model (MVVM) Application Framework for Hearing Impairment Diagnosis - Design and Features*
1570633602	*A Model-View-ViewModel (MVVM) Application Framework for Hearing Impairment Diagnosis - Type Dependency Architecture*
1570633611	*A Model-View-ViewModel (MVVM) Application Framework for Hearing Impairment Diagnosis - Class Inheritance Architecture*

COM 6: Networking and Security (Session Chair: John Edwards; Utah State University; john.edwards@usu.edu)

Paper No.	Author Names
Invited Talk (30 Minutes)	**Energy Efficient Mobile Edge Computing for 5G and Beyond** **Professor Rose Qingyang Hu (Utah State University)**
1570631185	*Prospect Theoretic Pricing for QoE Modeling in Wireless Multimedia Networking*
1570632640	*Towards Green Mobile Edge Computing Offloading Systems with Security Enhancement*
1570632931	*Experimental Study of Network Traffic Overhead in Cloud Environments*
1570635901	*USSD Digital Wallet*

COM 7: Computer System and Algorithms II (Session Chair: Reza Sanati; Utah Valley University; SANATIRE@uvu.edu)

Paper No.	Paper Title
1570633064	*Formal Definitions for Common Data Structures and Algorithms*
1570632825	*Exploring the Effectiveness of Linear Matrix Factorizations After Nonlinear Processing*
1570635872	*Quantum Theory of Molecular Communications in Nanomedicine*
1570628660	*Building Graphs with Maximum Connectivity*

COM 8: Computer Science Education (Session Chair: John Edwards; Utah State University; john.edwards@usu.edu)

Paper No.	Author Names	Paper Title
1570624810	George L Rudolph; Curtis Welborn	*CS 6150: A Practical Graduate Advanced Algorithms Course at UVU*
1570635654	Charles Paul Morrey	*Pathway Mapping for an Educational Program*
1570632056	John M Edwards; Joseph Ditton; Bishal Sainju; Joshua Dawson	*Different Assignments as Different Contexts: Predictors Across Assignments and Outcome Measures in CS1*

COM 9: Special Topics in Computing (Session Chair: Mario Harper; Utah State University; mario.harper@usu.edu)

Paper No.	Paper Title
1570630879	*High Dimensional Event Exploration over Multiple Simulations*
1570632895	*Augmented Reality Interface for Industrial Robot Controllers*
1570631972	*A Houston Toad Call Detection Initial Approach Using Gated Recurrent Units for Conservational Efforts*
1570635871	*The Input-Output Approach in Semiclassical Electrodynamics of Keller-Segel Equation*
1570632872	*The Hitchhiker's Guide to Successful Remote Sensing Deployments in Mongolia*

Technology Track:

TECH 1: Virtual Reality and Modelling (Session Chair: Kim Bartholomew; Utah Valley University; BARTHOKI@uvu.edu)

Paper No.	Paper Title
1570623813	Virtual Reality Training in Electric Utility Sector - An Underground Application Study Case
1570632845	Technological Modes of Making Architecture
1570631678	Using Cinematographic Tools for Historic House Digital Restorations
1570635560	How Virtual Reality Can Be Used in Archaeology
1570631412	Risk Assessments: A Weighted Score Approach to Improving Risk Management Decisions

TECH 2: Technology Application and Education (Session Chair: Paul Morrey; Utah Valley University; Paul.Morrey@uvu.edu)

Paper No.	Paper Title
1570632846	Project-Based Learning Center to Bridge to Students with Technology
1570632912	Developing Student Rubrics for Creative Evaluation: Academic Research to Improve Student Learning Outcomes and Increase Faculty Grading Efficiency
1570632683	Fuel Conservation Technology Development and Use in Large Transport Category Aircraft
1570631712	Define UX Design: What is the Role of User Experience in Software Organizations?
1570632396	Project Shock Factor

Poster Track:

POS I: Engineering Posters (Session Chair: Rawan Al-Nsour; Utah Valley University; Rawan.Nsour@uvu.edu)

Paper No.	Poster Title
1570632373	Adaptive Video Projector Headlights
1570632875	Additive Manufacturing Drone Design Challenge
1570629107	Handwritten Signature Verification Using Machine Learning Techniques
1570628724	New Algorithms and Review on Existing Machine Learning Algorithms on the Handwritten Digits Recognition Problem
1570628839	Stock Market Prediction Using Machine Learning Algorithms: The Case of Ford Motor Company
1570631462	An Analysis of a Thermoacoustic Vocal Tract Model

POS 2: Computing Posters (Session Chair: Masood Amin; Utah Valley University; AMINMA@uvu.edu)

Paper No.	Poster Title
1570632908	Automatic Detection of Redundant Fault Logs During Inspection of Software Requirement Documents
1570624118	Creating an Assembler and Virtual Machine
1570632861	Sentiment Analysis of Tweets for Economic Assessment
1570635617	Study on Effective Use of AR for Rural Revitalization in Japan

POS 3: Technology Posters (Session Chair: Seth Christensen; Utah Valley University; Seth.Christensen@uvu.edu)

Paper No.	Poster Title
1570633508	Automated Brewery System
1570632822	Automated Storage and Retrieval (ASRS)
1570633509	Pinball Machine
1570635498	Virtual Simulator Chair