

**Intermountain Engineering, Technology, and Computing Conference I-ETC 2020
Conference Virtual Sessions (Draft 24)**

Engineering Track:

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

Paper No.	Author Names	Paper Title
Invited Talk (30 Minutes)	Optical fiber sensing in harsh environments Professor Stephen Schultz (Brigham Young University)	
1570632857	Peter R Nyholm	<i>Surface Detection of Semi-Transparent Media Through Modified Confocal Microscopy</i>
1570624197	Patrick J Spackman; Stephen Schultz; Ivann Velasco	<i>Implementation and Survivability of Fiber Optic Sensing in Body Armor</i>
1570631043	Ivann Velasco; Patrick J Spackman; Stephen Schultz	<i>Body Armor Shape Sensing Using Fiber Bragg Gratings</i>
1570632858	Jared E Payne; Ryan T Beazer; Stephen Schultz; Peter R Nyholm	<i>Automated Control of a Femtosecond Laser Along the Surface of a Planar Sample</i>

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

Paper No.	Author Names	Paper Title
Invited Talk (30 Minutes)	Introduction to Polar Codes Professor Todd Moon (Utah State University)	
1570629908	Al-Waled Al-Dulaimi; Todd Moon; Jake Gunther	<i>Phase Effects on Speech and Its Influence on Warped Speech</i>
1570635900	Kaveen Liyanage; Bradley M Whitaker	<i>Satellite Image Classification Using LC-KSVD Sparse Coding</i>
1570632091	Kailee Parkinson; Afsaneh Minaie; R. Sanati-Mehrzy	<i>Recognizing Fractal Behavior in Jackson Pollock Artwork Through Computer Vision</i>

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

Paper No.	Author Names	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	Hossein Parastvand; Octavian Bass; Mohammad A.S Masoum; Zeinab Moghaddam; Stefan Lachowicz; Airlie Chapman	<i>Placement and Sizing of EV Charging Stations According to Centrality of the Underlying Network</i>
1570634149	SM Ferdous; Farhad Shahnia; GM Shafiullah	<i>Various Structures and Control Strategies for Provisional Energy Transaction Management in Coupled Microgrid Clusters</i>
1570623003	Gabriel Costa; Bruno Pacheco; Marcos Aurelio Izumida Martins; Ricardo de Oliveira Brandão	<i>Adaptive Protection System Using Neutral Currents Studies and Load Estimation</i>

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

Paper No.	Author Names	Paper Title
Invited Talk (30 Minutes)	Compressive Sensing and its applications Assistant Professor Mohammad Shekaramiz (Utah Valley University)	
1570632697	Mohammad Shekaramiz; Todd Moon	<i>Compressive Sensing via Variational Bayesian Inference</i>
1570635045	Abrar Zahin; Tan Thanh Le; Rose Qingyang Hu	<i>A Machine Learning Based Framework for the Smart Healthcare Monitoring</i>
1570632932	Amirhossein Manzourolajdad	<i>Do Empirical and Abstract Shannon Entropies Converge in Value? A Case in RNA Molecular Structure</i>
1570632460	Amanda C Bordelon	<i>Visualizing Air Voids and Synthetic Fibers from X-Ray Computed Tomographic Images of Concrete</i>

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

Paper No.	Author Names	Paper Title
1570633797	Kazem Sohraby; Saeed Moaveni; Krista Ruggles	<i>SeedPOD: An Effective Vehicle for Engineering and Technology Education</i>
1570632842	Abdenmour Seibi	<i>Toward the Development of Capstone Design Guidelines in Newly Established Engineering Programs</i>
1570632852	Golam Gause Jaman; Nusrat Farheen; Marco P Schoen	<i>Cost Effective Mobile Robots Navigation and Mapping System for Education</i>
1570632906	Rawan Al-Nsour; Basil Hamdan	<i>Incorporating Cybersecurity in Undergraduate Mechatronics Engineering Technology Education</i>
1570627104	William Regula; Jordan Gilbert; Waseem Sheikh	<i>Stereophonic Frequency Modulation Using MATLAB: An Undergraduate Research Project</i>
1570632898	Jacob D Newman; Zheng Sun; Dah-Jye Lee	<i>Self-Driving Cars: A Platform for Learning and Research</i>
1570635818	Matthew Lein; Rachel Blomquist; David DeMuth, Jr.	<i>Teaching Computation in Introductory Physics</i>

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

Paper No.	Author Names	Paper Title
1570632941	Aleczander N Escamilla; Craig Staples; Paul JW Andersen; William Guthrie	<i>Mechanistic-Empirical Pavement Design for Minor Collector Streets Incorporating Cement-Treated Base Layers</i>
1570632907	Aubrey Hebdon; Elizabeth Smith; W. Spencer Guthrie	<i>Mitigation of Cracking in Concrete Bridge Decks Using Twisted Steel Micro-Rebar</i>
1570632934	Chad D Vickery; W. Spencer Guthrie	<i>Interruption of the Aggregate Matrix by Geogrid Reinforcement in Resilient Modulus Testing</i>
1570635909	Tenli Emery; Robert Stevens; W. Spencer Guthrie	<i>Soil-Water Characteristic Curves for Clayey Soil Treated with Cement or Lime</i>
1570632819	Ben J Willardson	<i>Sustainable Debris Basins for Post-Fire Protection</i>
1570632950	Gina Young; Alexis Post; Zaley Kaelberer; W. Spencer Guthrie	<i>Influence of Personal Relationships on Selection of Civil Engineering as a Career</i>

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

Paper No.	Author Names	Paper Title
1570623482	Ryan Moeller; Taher Deemyad; Anish Sebastian	<i>Autonomous Navigation of an Agricultural Robot Using RTK GPS and Pixhawk</i>
1570623487	Taher Deemyad; Ryan Moeller; Anish Sebastian	<i>Chassis Design and Analysis of an Autonomous Ground Vehicle (AGV) Using Genetic Algorithm</i>
1570632870	Shawn C Weeks	<i>Additive Manufacturing Drone Design</i>
1570624088	Kellie N Wilson; M. P Schoen	<i>Jet Engine Modeling and Control Using T-MATS</i>
1570624087	Md Fahdul Chowdhury; Marco P Schoen; Jichao Li	<i>Parameter Identification and Fuzzy Logic Controller Design for a One-Stage Axial Flow Compressor System Based on Moore-Greitzer Model</i>
1570632658	Matthew Salfer-Hobbs; Matthew J Jensen	<i>Acceleration, Braking, and Steering Controller for a Polaris Gem E2 Vehicle</i>

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

Paper No.	Author Names	Paper Title
1570632787	Tiago Rabelo Chaves; Marcos Aurelio Izumida Martins; Bruno Pacheco	<i>MV/LV Overhead Transformer Monitoring and Hot Spot Temperature Estimation</i>
1570631673	Jonathan Devadason; Paul Moses	<i>Small Signal Stability of a Series Compensated Microgrid Operating in Islanded Mode</i>
1570621792	Wanghao Fei; Paul Moses; Chad Davis	<i>Identification of Smart Grid Attacks via State Vector Estimator and Support Vector Machine Methods</i>
1570630997	Marounfa Djibo; Paul Moses	<i>Integration of Energy Storage and Pulsed-Power Technologies in Shipboard Power Systems</i>

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

Paper No.	Author Names	Paper Title
1570631426	Jace Rozsa; Yixin Song; Devon Webb; Naomi Debaene; Austin Kerr; Elaura Gustafson; Tabitha Caldwell; Halle Murray; Daniel Austin; Shiuh-hua Wood Chiang; Aaron Hawkins	<i>A Verified Simulation Method for Image Charge Detection with Non-cylindrical Electrodes</i>
1570634748	Ehsan Rohani; Soha Boroojerdi	<i>Noise Resistant Full Adder Using DNA Strands</i>
1570632757	Yixin Song; Jace Rozsa; Joan Magalhaes; Shea Smith; Benjamin Karlinsey; Whitney Kinnison; Elaura Gustafson; Daniel Austin; Aaron Hawkins; Shiuh-hua Wood Chiang	<i>Design of Common-Mode Feedback for High-Gain Charge Amplifier</i>
1570632031	Jakob W Kunzler; Spencer Ammermon; Karl Warnick	<i>Progress Toward Airborne GPS Spatial Filtering Powered by Recent Advances in FPGA Technology</i>

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

Paper No.	Author Names	Paper Title
1570632689	Farah Arabian; Michael Rice; Rose Qingyang Hu	<i>Who's on First in 5G Mobile Networks: Equalizers or Polarization Diversity Combiners?</i>
1570624199	Kevin Escobar; Daniel Parker; Jonathan Jacobs; Tara Spafford; Alex Orange; Timothy A. Hahn; David H Detienne; Jon Davies; Angela Rasmussen	<i>Geolocation on the University of Utah POWDER 5G Testbed</i>
1570631466	Muhammad Nasir Khan	<i>Future of Free Space Communication Systems (FSCS): An Overview</i>
1570635870	Huber Nieto-Chaupis	<i>Hyper Secure Cognitive Radio Communications in an Internet of Space Things Network Based on the BB84 Protocol</i>

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

Paper No.	Author Names	Paper Title
1570632886	Grant G. Stagg; Rachel Harris; Hollis Belnap; Aaron Hawkins	<i>Nanoscale Electrostatic Membrane Actuation for Nanofluidic Pumping</i>
1570632855	Ryan T Beazer	<i>Micromachining of Silicon Carbide Using Wire Electrical Discharge Machining</i>
1570632938	Davin T Fish	<i>Self-sustaining 3-Dimensional Thin Liquid Films in Ambient Environments</i>
1570632859	James Green; Carlos R Vilorio; Kalliyon D. Lay; Christine Lastra; Aaron Hawkins	<i>Silicon Micro Gas Chromatography with Silk Screen Heater and Polyimide Capillary Insertion</i>

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

Paper No.	Author Names	Paper Title
1570635565	Amanda C Bordelon; Nikesh Reddy Cholleti	<i>Waste Glass Dust to Reduce Alkali Silica Reaction</i>
1570632720	Aaron B Smith; W. Spencer Guthrie	<i>Correlating Aggregate Polish Susceptibility to Limestone Concentration Using X-Ray Diffraction</i>
1570632930	Robert Stevens; W. Spencer Guthrie	<i>Effect of Consolidation Effort on Mechanical Properties of Field-Mixed Polyester Polymer Concrete for Bridge Deck Overlays</i>
1570632864	W. Spencer Guthrie; Elizabeth Smith; Robert Stevens; Tenli Emery	<i>Cement Slurry Application Using a Ready-Mixed Concrete Truck: Best Practices for Urban Pavement Construction</i>
1570631416	Wadie Chalgham; Abdennour Seibi; Jim Lee	<i>Reducing the Relative Error Between the Experimental and Numerical Results of a Pipeline Leak Flowrate Using a Lean Six-Sigma Based Approach</i>

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

Paper No.	Author Names	Paper Title
1570631020	Rezwan Matin; Damian Valles	<i>A Speech Emotion Recognition Solution Based on Support Vector Machine for Children with Autism Spectrum Disorder to Help Identify Human Emotions</i>
1570632853	Shovan Chowdhury; Marco P Schoen	<i>Research Paper Classification Using Supervised Machine Learning Techniques</i>
1570632722	Trey Scofield; Bradley M Whitaker	<i>Machine Learning Pipeline for Shift-Invariant Detection of Volcanoes on Venus</i>
1570631471	Qianwen Bi; Jingpeng Tang; Fleet Bradley	<i>Software Architecture for Machine Learning in Personal Financial Planning</i>

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

Paper No.	Author Names	Paper Title
1570631671	Hunter M Harris; Makayla Thompson; Isaac D Griffith; Paul Bodily	<i>HeyLo: Visualizing User Interests from Twitter Using Emoji in Mixed Reality</i>
1570632835	Syed Attique Shah; Sadok Ben Yahia; Keegan McBride; Dirk Draheim	<i>Twitter-based Big Data Analytics for Disaster Alerts: TAGS (Twitter Alert Generation System)</i>
1570632850	Daniel M McDonald; John E Anderson	<i>A Data Science Expert Social Network: From Personal Follower List to Social Network Structure</i>
1570631666	Dylan Lasher; Paul Bodily	<i>Tweet-Inspired Intelligent Subselection of Semantically-Related Lyrical Training Data</i>

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

Paper No.	Author Names	Paper Title
1570632891	Sazida Binta Islam; Damian Valles; Michael Forstner	<i>Herpetofauna Species Classification from Images with Deep Neural Network</i>
1570623518	Tavish M Burnah; George L Rudolph	<i>Offline Handwriting Recognition Pipeline Testing Tool</i>
1570632893	Sujan Ray; Khaldoon Al-shouiliy; Anupam Roy; Ali AlGhamdi; Dharma P Agrawal	<i>Chi-Squared Based Feature Selection for Stroke Prediction Using AzureML</i>

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

Paper No.	Author Names	Paper Title
1570619582	Isaac D Griffith; Rosetta F Roberts	<i>An Approach Towards Merging Grammars</i>
1570620854	Rosetta F Roberts; Isaac D Griffith	<i>Grammar Normalization to Support Automated Merging</i>
1570631699	Porter Glines; Brandon Biggs; Paul Bodily	<i>Probabilistic Generation of Sequences Under Constraints</i>
1570630881	David Mulder; Jingpeng Tang	<i>Impact of Quantum Values on Multilevel Feedback Queue for CPU Scheduling</i>

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

Paper No.	Author Names	Paper Title
1570626200	Neil B Harrison; Lynn Thackeray	<i>Teaching Systems Thinking as a Foundation of Scrum</i>
1570632892	Gregory S Hodgson; Neil B Harrison; George L Rudolph; Chuck Allison	<i>Visualization of Requirements to Software Architecture Component Mappings</i>
1570633591	Waseem Sheikh; Nadeem Sheikh	<i>A Model-View-View-Model (MVVM) Application Framework for Hearing Impairment Diagnosis - Design and Features</i>
1570633602	Waseem Sheikh; Nadeem Sheikh	<i>A Model-View-View-Model (MVVM) Application Framework for Hearing Impairment Diagnosis - Type Dependency Architecture</i>
1570633611	Waseem Sheikh; Nadeem Sheikh	<i>A Model-View-View-Model (MVVM) Application Framework for Hearing Impairment Diagnosis - Class Inheritance Architecture</i>

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	Krishna Murthy Kattiyan Ramamoorthy; Wei Wang	<i>Prospect Theoretic Pricing for QoE Modeling in Wireless Multimedia Networking</i>
1570632640	Haijian Sun; Qun Wang; Xiang Ma; Yongjun Xu; Rose Qingyang Hu	<i>Towards Green Mobile Edge Computing Offloading Systems with Security Enhancement</i>
1570632931	Adam Grady; Ahyoung Lee	<i>Experimental Study of Network Traffic Overhead in Cloud Environments</i>
1570635901	Avik Mallik; Charlie Tran; Alain Twagirumukiza	<i>USSD Digital Wallet</i>

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

Paper No.	Author Names	Paper Title
1570633064	Curtis Welborn; George L Rudolph	<i>Formal Definitions for Common Data Structures and Algorithms</i>
1570632825	Bradley M Whitaker; David V Anderson	<i>Exploring the Effectiveness of Linear Matrix Factorizations After Nonlinear Processing</i>
1570635872	Huber Nieto-Chaupis	<i>Quantum Theory of Molecular Communications in Nanomedicine</i>
1570628660	Maryam Jafarpour; Mohammad Shekaramiz; Abolfazl Javan; Ali Moeini	<i>Building Graphs with Maximum Connectivity</i>

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	<i>CS 6150: A Practical Graduate Advanced Algorithms Course at UVU</i>
1570635654	Charles Paul Morrey	<i>Pathway Mapping for an Educational Program</i>
1570632056	John M Edwards; Joseph Ditton; Bishal Sainju; Joshua Dawson	<i>Different Assignments as Different Contexts: Predictors Across Assignments and Outcome Measures in CSI</i>

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

Paper No.	Author Names	Paper Title
1570630879	Steven D Scott; Jaxon Willard; John M Edwards	<i>High Dimensional Event Exploration over Multiple Simulations</i>
1570632895	Kenneth A Stone; Shane Dittrich; Mike Luna; Alba Perez-Gracia; Omid Heidari; Marco P Schoen	<i>Augmented Reality Interface for Industrial Robot Controllers</i>
1570631972	Shafinaz Islam; Damian Valles; Michael Forstner	<i>A Houston Toad Call Detection Initial Approach Using Gated Recurrent Units for Conservational Efforts</i>
1570635871	Huber Nieto-Chaupis	<i>The Input-Output Approach in Semiclassical Electrodynamics of Keller-Segel Equation</i>
1570632872	Lehi Sttenio Alcantara; Joseph Miera; Batsaikhan Ariun-Erdene; Chia-Chi Teng; Philip Lundrigan	<i>The Hitchhiker's Guide to Successful Remote Sensing Deployments in Mongolia</i>

Technology Track:

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

Paper No.	Author Names	Paper Title
1570623813	Diogo Vinicius Joao; Paula Zenni Lodetti; Aguinaldo Santos; Marcos Aurelio Izumida Martins; João Almeida; Daniel Marques da Silva Chaves	Virtual Reality Training in Electric Utility Sector - An Underground Application Study Case
1570632845	Brandon R Ro	Technological Modes of Making Architecture
1570631678	Marika Elaine Snider	Using Cinematographic Tools for Historic House Digital Restorations
1570635560	Paul Cheney; Daniel Hatch	How Virtual Reality Can Be Used in Archaeology
1570631412	Kodey S. Crandall	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.	Author Names	Paper Title
1570632846	Mary Foss; Yucheng Liu	Project-Based Learning Center to Bridge to Students with Technology
1570632912	Daniel Hatch; Seth Y Christensen; Eric Oliver	Developing Student Rubrics for Creative Evaluation: Academic Research to Improve Student Learning Outcomes and Increase Faculty Grading Efficiency
1570632683	Jack E Troutt, iii	Fuel Conservation Technology Development and Use in Large Transport Category Aircraft
1570631712	Seth Y Christensen; Joan Dickinson; Kristin Machac; Holly Cline	Define UX Design: What is the Role of User Experience in Software Organizations?
1570632396	Terrance K. Orr	Project Shock Factor

Poster Track:

POS 1: Engineering Posters (Session Chair: Rawan Al-Nsour; Utah Valley University; Rawan.Nsour@uvu.edu)

Paper No.	Author Names	Poster Title
<u>1570632373</u>	Afsaneh Minaie, Christian Garrett and Jason Wright	Adaptive Video Projector Headlights
<u>1570632875</u>	<u>Shawn C Weeks</u>	Additive Manufacturing Drone Design Challenge
<u>1570629107</u>	<u>Andrew Bowns, Jason Ellsworth and Mohammad Shekaramiz</u>	Handwritten Signature Verification Using Machine Learning Techniques
<u>1570628724</u>	<u>Linda Jensen, Mohammad Shekaramiz and Mike Zimmerman</u>	New Algorithms and Review on Existing Machine Learning Algorithms on the Handwritten Digits Recognition Problem
<u>1570628839</u>	<u>Christian Garrett, Jacob Herrmann, Jason Sheetz and Mohammad Shekaramiz</u>	Stock Market Prediction Using Machine Learning Algorithms: The Case of Ford Motor Company

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

Paper No.	Author Names	Poster Title
<u>1570632908</u>	<u>Ishan Subedi, Manas Mudbari, Maninder Singh</u>	Automatic Detection of Redundant Fault Logs During Inspection of Software Requirement Documents
<u>1570624118</u>	<u>Ryan G Ferguson, Curtis Welborn and Forrest Maynard</u>	Creating an Assembler and Virtual Machine
<u>1570632861</u>	<u>Caleb M Kopp, Farhat Samara, Mehdi Mekni, Maninder Singh, Daniel Tillmann, Samuel Ondieki</u>	Sentiment Analysis of Tweets for Economic Assessment
<u>1570635617</u>	<u>Heejin Yoon; Yuri A Tijerino</u>	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.	Author Names	Poster Title
<u>1570633508</u>	Camron Sherman, Joe Mackay, Kyle Olsen, Zac Evans & Rawan Al-Nsour	Automated Brewery System
<u>1570632822</u>	Matt Bezzant, Zach Cherrington, David Cordova, Jacob Pugmire & Rawan Al-Nsour	Automated Storage and Retrieval (ASRS)
<u>1570633509</u>	Russel Reeder, Kasadee Godfrey, Leila Namazzi & Rawan Al-Nsour	Pinball Machine
<u>1570635498</u>	Baylor Haddock, Garrick Woods and Rawan Al-Nsour	Virtual Simulator Chair