

IEEE MIT Undergraduate Research Technology Conference 2020  
Technical Paper Oral Presentation Schedule

<p style="text-align: center;"><b>Saturday, October 10, 2020</b>  <b>Hopin: Session Room A</b>  <b>Machine Learning / Artificial Intelligence (AI) Track #1</b>  <b>Track Chair: James Byleckie</b></p>		
EST TIME	PAPER TITLE	PRESENTERS
8:00AM	<b>PA20-0011:</b> Increasing OCR Accuracy on Images with Motion Blur via GAN Derivatives	<b>Kyoungwan Woo</b> (Phillips Exeter Academy)
8:10AM	<b>PA20-0017:</b> Using Neural Networks to Reinforce Absence of Gender Bias in Dyslexia Screenings	<b>William Hobbs</b> (University of South Carolina)
8:20AM	<b>PA20-0020:</b> Stock Prediction via Machine Learning and Factor Analysis	<b>Zhaowen Yun</b> (University of Nottingham Ningbo China)
8:30AM	<b>PA20-0021:</b> Comparative Analysis of Image Processing Algorithms for Airport Security	<b>Sasha Callaway</b> , Jeffrey Cheng, David Fu, Alexander Contratti, Harshika Gelivi (Rutgers University)
8:40AM	<b>PA20-0027:</b> Small-Sized Neural Network for Detecting COVID-19 from Chest X-rays	<b>Rahul Thapa</b> (Villanova University)
8:50AM	<b>PA20-0036:</b> ParaShop: A Mobile AR App in Assisting People with ASD to Shop	<b>Mengting Xia</b> (The City College of New York)
9:00AM	<b>PA20-0037:</b> Random Forest Regression of Markov Chains for Accessible Music Generation	<b>Vivian Chen</b> , Jackson DeVico, Arianna Reischer, Ananya Vasireddy, Nicholas Zhang, Leo Stepanewk (Rutgers University)
9:10AM	<b>PA20-0041:</b> Associating Exposures to Adverse Health Outcomes using Decision Trees	<b>Aditi Purandare</b> , Heidi Yap (Northeastern University)
9:20AM	<b>PA20-0046:</b> Object Permanence in Videos: DNN Performance vs Human Ability	<b>Irene Zhou</b> (Massachusetts Institute of Technology)
9:30AM	<b>PA20-0059:</b> Real time Attention Span Tracking in Online Education	<b>Rahul Rangarajan Kannan</b> (Sri Venkateswara College of Engineering)

**AM TRACK #1**

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<p style="text-align: center;"><b>Saturday, October 10, 2020</b>  <b>Hopin: Session Room B</b>  <b>Robotics and Controls Track</b>  <b>Track Chair: Neil Deshmukh</b></p>		
EST TIME	PAPER TITLE	PRESENTERS
8:00AM	<b>PA20-0014:</b> Bio-Inspired Hexapedal Firefighting Robot	<b>Kirkland Boyd</b> (Trinity College)
8:10AM	<b>PA20-0066:</b> Design and Implementation of Hardware and Speed and Torque Control with Regenerative Braking System for an Electric Vehicle for Personal Mobility	<b>Alex Pulamarin</b> (National Polytechnic University)
8:20AM	<b>PA20-0073:</b> Safe Reconfiguration of Autonomous Driving Systems	<b>Keying Wang</b> (Carnegie Mellon University)
8:30AM	<b>PA20-0081:</b> Enabling Adaptive Robot-Environment Interaction and Context-Aware Artificial Somatosensory Reflexes through Application-Specific Sensor-Embedded Wearables	<b>Syamantak Payra</b> (Massachusetts Institute of Technology)
8:40AM	<b>PA20-0090:</b> Using Closed Feedback Loops to Evaluate Autonomous Juggling Performance	<b>Hamzah Farooqi</b> , Tomas Collado, Tashu Gupta, Ashwindev Pazhetam, Robert Taylor (Rutgers University)
8:50AM	<b>PA20-0097:</b> Hoist Load Stabilization via Torque-Based and Retraction-Speed Control Systems	<b>Kristina Hughes</b> (The United States Military Academy)
9:00AM	<b>PA20-0100:</b> Sling Load Stabilization	<b>Michael Flanagan</b> (The United States Military Academy)
9:10AM	<b>PA20-0123:</b> Design of a Printed Circuit Board (PCB) for Electrical Integration on the Agile Ground Robot (AGRO)	<b>Andres Rodriguez</b> (The United States Military Academy)
9:20AM	<b>PA20-0132:</b> Decentralized Voltage Control in Power Inverters Using Feedback Optimization	<b>Nelson Enrique Tello Bautista</b> (National University of Colombia)
9:30AM	<b>PA20-0134:</b> Electric Vehicle for Personal Mobility with Torque and Speed Control Design and Regenerative Braking	<b>Alex Pulamarin</b> (National Polytechnic University)

**AM TRACK #2**

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<p style="text-align: center;"><b>Saturday, October 10, 2020</b>  <b>Hopin: Breakout Room C</b>  <b>Biological and Biomedical Engineering and Technology (BioEECS) Track,</b>  <b>Innovative Technologies Track</b>  <b>Track Chair: Penny Tan (Ram Dhurjatry)</b></p>		
EST TIME	PAPER TITLE	PRESENTERS
8:00AM	<b>PA20-0016:</b> A Novel Controller Architecture for Intelligent Artificial Pancreas	<b>Eric Costa Pimentel</b> (University of Illinois - Chicago)
8:10AM	<b>PA20-0058:</b> An Analog Front-End For A Noninvasive Core Body Temperature Sensor	<b>Eric Baccei, Eric Macorri</b> (Worcester Polytechnic Institute)
8:20AM	<b>PA20-0063:</b> Decoding Emotions from Brain Signals Using Recurrent Neural Networks	<b>Eva Zhang, Jos Parayil, Aaliyah Sayed, Jonathan Yao, Raphaelle Hoang</b> (Rutgers University)
8:30AM	<b>PA20-0071:</b> Classifying EEG of Propofol-Induced Unconsciousness in the Presence of Burst Suppression	<b>Willian De Faria</b> (University of Notre Dame)
8:40AM	<b>PA20-0096:</b> A Photoplethysmography Wearable with Long-term Heart Rate Variability Detection Algorithm	<b>Bill Chieng</b> (Worcester Polytechnic Institute)
8:50AM	<b>PA20-0103:</b> Improving Prosthetics by Using Silicone as an Artificial Skin	<b>Lasya Balachandran</b> (High Technology High School)
9:00AM	<b>PA20-0124:</b> Detecting Differential Transcription Factor Binding Based on DNA Accessibility	<b>John Lin</b> (Boston Latin School)
9:10AM	<b>PA20-0013:</b> 3D Depth Imaging for Assistive Guidance	<b>Manuel Ackattupathil, Eli Levenshus</b> (Bergen Community College)
9:20AM	<b>PA20-0051:</b> Probabilistic Analysis of Confocally Imaged Synaptic Calcium Activity (PACISCA)	<b>Grace Tang, Shreya Kochar</b> (Massachusetts Institute of Technology, Wellesley College)
9:30AM	<b>PA20-0052:</b> Designing and Simulating a Smart Air Purifier to Combat HVAC-induced COVID-19 Transmission	<b>Noah Bergam, Sakshi Lende, Skyler Snow, Julianna Zhang, Lily Chen</b> (Rutgers University)
9:40AM	<b>PA20-0061:</b> A Hybrid Approach to Noise-Reduced Pods in Urban Areas	<b>Lasya Balachandran, Arjun Agarwal, Hannah Cherry, John Kellaher, Ethne Laude</b> (Rutgers University)

**AM TRACK #3**

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**Saturday, October 10, 2020**  
**Hopin: Breakout Room A**  
**Machine Learning / Artificial Intelligence (AI) Track #2**  
**Track Chair: James Byleckie**

EST TIME	PAPER TITLE	PRESENTERS
12:30PM	<b>PA20-0062:</b> Time Warping Clustering for the Forecast and Analysis of COVID-19	<b>Qixuan Jin</b> (California Institute of Technology)
12:40PM	<b>PA20-0068:</b> Hierarchical BiGraph Neural Network as Recommendation Systems	<b>Dom Huh</b> (George Mason University)
12:50PM	<b>PA20-0069:</b> Positive Unlabeled Gradient Boosting	<b>Andrea Boskovic</b> (Smith College)
1:00PM	<b>PA20-0072:</b> A Low-Cost Radar-based Domain Adaptive Breast Cancer Screening System	<b>Samuel Claflin</b> (University of Massachusetts Lowell)
1:10PM	<b>PA20-0089:</b> Utilizing Artificial Intelligence to Diagnose Autism Spectrum Disorder Based on Eye Tracking Saccades	<b>Abinaya Dinesh</b> (Stanford University)
1:20PM	<b>PA20-0099:</b> Computer-aided Ischemic Stroke Classification from EEG Data Using a Single-Tiered Spiking Neural Network Framework	<b>Elon Litman</b> (John L. Miller Great Neck North High School)
1:30PM	<b>PA20-0101:</b> Detecting Fake News on Twitter Using Machine Learning Models	<b>Emma Cueva</b> , Grace Ee, Akshat Iyer, Alexandra Pereira, Alexander Rosman (Rutgers University)
1:40PM	<b>PA20-0108:</b> Determining Top Fully-Connected Layer's Hidden Neuron Count for Transfer Learning, using Knowledge Distillation	<b>Ritwick Ghosh</b> (Indian Institute of Engineering Science and Technology, Shibpur)
1:50PM	<b>PA20-0114:</b> A-Seeker: An Efficient Audio Transcription Platform	<b>Harrison Affel</b> , Sean Cox (Wentworth Institute of Technology)
2:00PM	<b>PA20-0121:</b> A Novel Approach to Toxic Gas Detection using an IoT Device and Deep Neural Networks	<b>Ibrahim Bhavnagarwala</b> , Adam Bhavnagarwala (Danbury High School, NJIT)
2:10PM	<b>PA20-0128:</b> Assistive Diagnostic Tool for Brain Tumor Detection using Computer Vision	<b>Sahithi Ankireddy</b> (James B. Conant High School)

**PM TRACK #1**

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<p style="text-align: center;"><b>Saturday, October 10, 2020</b>  <b>Hopin: Breakout Room B</b>  <b>Security and Communications Track, Computer Systems Track, Human-Computer Interaction and Graphics Track, Theoretical Computer Science and Mathematics Track</b>  <b>Track Chair: Ivy Wang</b></p>		
EST TIME	PAPER TITLE	PRESENTERS
12:30PM	<b>PA20-0012:</b> MobSF: Mobile Health Related Android Applications Through The Lens of Open Source Static Analysis	<b>Grace LaMalva</b> (St. John's University)
12:40PM	<b>PA20-0120:</b> Aquaculture: A Cost-Effective Automated Aquaponic Gardening System	<b>Justin Cooper</b> , Macone Connor (Wentworth Institute of Technology)
12:50PM	<b>PA20-0032:</b> Share &Care: A Senior-Friendly Family Interaction Application	<b>Jin Chen</b> (The City College of New York CUNY)
1:00PM	<b>PA20-0049:</b> Integrating Natural Language Processing & Computer Vision into an Interactive Learning Platform	<b>Rithesh Rajasekar</b> , Benson Liu, Aditya Shukla, Lucy Xu (Rutgers Honors College)
1:10PM	<b>PA20-0098:</b> Programming an Educational Chatbot to Support Virtual Learning	<b>Rachel Ai</b> , Disha Kohli, Lee Maina, Evelyn Manelski (Rutgers School of Engineering)
1:20PM	<b>PA20-0115:</b> Exploration of SVD for Image Compression and Time Series Processing	<b>Jesse Redford</b> (University of North Carolina)
1:30PM	<b>PA20-0009:</b> System Design for Remote Pulse Examination	<b>Tung Pham</b> (Wentworth Institute of Technology)
1:40PM	<b>PA20-0077:</b> MusCare: A Mobile Design for Muscle Monitoring	<b>Chrishopher Dombe</b> (Wentworth Institute of Technology)
1:50PM	<b>PA20-0104:</b> Mobile Microclimate System for Architectural Fieldwork	<b>Qian Ying Zeng</b> (Wentworth Institute of Technology)
2:00PM	<b>FIRST LEGO League:</b> Team Blue Box - Project Research	Anthony Wan, Anna Sun, Gauri Valiyodiyil, Sree Krothapalli, Robert Albu, Sasha Luchanok, Jocelyn McGarry, Govind Valiyodiyil
2:10PM	<b>FIRST LEGO League:</b> Team ICE Box - Project Research	Matthew Dona, Stafen Barbu, Aditya Biju

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<p style="text-align: center;"><b>Saturday, October 10, 2020</b>  <b>Hopin: Breakout Room C</b>  <b>Circuits, Materials, and Nanotechnologies Track, Innovative Technologies Track</b>  <b>Track Chair: Neil Deshmukh</b></p>		
EST TIME	PAPER TITLE	PRESENTERS
12:30PM	<b>PA20-0008:</b> Aluminum-Calcium Composite Conductors: The Future of America's Power Grid	<b>Jennifer Lew</b> (Palos Verdes Peninsula High School)
12:40PM	<b>PA20-0064:</b> A Tight-Binding Model for Gallium Oxide: The Newest Ultra Wide-Bandgap Semiconductor	<b>Yifan (Frank) Zhang</b> , Bill Liu (Cornell University)
12:50PM	<b>PA20-0087:</b> An Analog Front-End for a Photoplethysmography Patch to Monitor Respiratory Rate	<b>Mona Elokda</b> (Worcester Polytechnic Institute)
1:00PM	<b>PA20-0092:</b> Electrical Power System Design and Test for Maine's First CubeSat (MESAT1)	<b>Joseph Patton</b> (University of Maine)
1:10PM	<b>PA20-0116:</b> Analysis of Lithium-Ion Battery Failure and PyBaMM's Viability in Simulating Them	<b>Alexander Cho</b> , Daniel Vail, Patrick Wang, Greyson Sapio (Rutgers University)
1:20PM	<b>PA20-0149:</b> A Low Cost Power Efficient Wireless Soil Moisture Sensor Network for Forest Ecosystem Monitoring	<b>Thayer Whitney</b> (University of Maine)
1:30PM	<b>PA20-0112:</b> Thermal Simulation of a CPU Based on Model Order Reduction	<b>Kayla Ruttan</b> (Clarkson University)
1:40PM	<b>PA20-0118:</b> Partial Discharge Detection By Classification of Tesla-Coil Music	<b>Kai Shraiberg</b> (Wentworth Institute of Technology)
1:50PM	<b>PA20-0129:</b> Low Cost Vaping Detectors to Mitigate Teenage Vaping	<b>Aarushi Pant</b> (Westborough High School)
2:00PM	<b>PA20-0127:</b> Solar Fish Drying System	<b>Joseph Cordeiro</b> (Wentworth Institute of Technology)