

IEEE MIT Undergraduate Research Technology Conference 2024  
 Technical Paper Oral Presentation Schedule



Saturday, October 12, 2024 (Stata Center 32-123)  
 Track #1A: Technology of Computation  
 Track Chair: James Byleckie



EST TIME	PAPER TITLE	PRESENTERS
<b>9:30AM - 12:30PM EST</b>	<p><b>Paper ID-003</b>                      AI-Driven Tennis Coaching</p>	<p><b>Yujun Ge</b>                      (Cerritos High School)</p>
	<p><b>Paper ID-011</b>                      Tennis match outcome prediction using machine learning and in-match statistics</p>	<p><b>Yash Gupta</b>                      (Morris Hills High School)</p>
	<p><b>Paper ID-037</b>                      Deep Learning Approach to Photometric Redshift Estimation</p>	<p><b>Krishna Chunduri</b> (UC Berkeley);  <b>Mithun Mahesh</b> (Purdue University)</p>
	<p><b>Paper ID-044</b>                      An Explainable AI Framework with ML Model Stacking for House Price Prediction</p>	<p><b>Sanjay Ganapathy</b>                      (Gretchen Whitney High School)</p>
	<p><b>Paper ID-065</b>                      Identifying Client Requirements Using LLMS</p>	<p><b>Dustin O'Brien, Spencer Presley</b>                      (Salisbury University)</p>
	<p><b>Paper ID-075</b>                      Multilabel Text Classification Using Transformers</p>	<p><b>Heather Milano</b>                      (University of Massachusetts Lowell)</p>
	<p><b>Paper ID-090</b>                      Novel Cash Flow Based Underwriting Model using Gradient Boosted Decision Trees</p>	<p><b>Mihit Puvvula</b></p>
	<p><b>Paper ID-093</b>                      Evaluating Cascaded Methods of Vision-Language Models for Zero-Shot Detection and Association of Hardhats for Increased Construction Safety</p>	<p><b>Lucas Choi</b>                      (Archbishop Mitty High School)</p>
	<p><b>Paper ID-094</b>                      Hybrid Quantum-Classical Method for Bank Account Fraud Detection using Quantum Encoding and Quantum Machine Learning</p>	<p><b>Tanush Vuppala</b>                      (TJHSST)</p>

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EST TIME	PAPER TITLE	PRESENTERS
<b>9:30AM - 12:30PM EST</b>	<p><b>Paper ID-102</b>                      Enhancing Psychiatric Diagnosis with Machine Learning Models for Blood Biomarker Analysis</p>	<p><b>Alyssa Lee, Britney Ise Okhiria</b>                      (Northeastern University)</p>
	<p><b>Paper ID-103</b>                      Visual Analysis for Threat Detection in Photosensitive Epilepsy</p>	<p><b>Shivaprasath Veera</b>                      (University of Rhode Island)</p>
	<p><b>Paper ID-107</b>                      Graph Neural Network and Molecular Docking Simulations of Aptamer-Mediated CAR T-Cell Therapy</p>	<p><b>Aarya Gupta</b>                      (Georgia State University)</p>
	<p><b>Paper ID-130</b>                      Computational Simulations for Investigating the Interaction between CD8+ CAR T Cells and the EGFRVIII Receptor in Glioblastoma</p>	<p><b>Simran Chaudhuri</b>                      (University of California San Diego)</p>
	<p><b>Paper ID-154</b>                      Limited Data X-ray Computerized Tomography</p>	<p><b>Bayan Tuffaha, Astha Shah</b>                      (Tufts University)</p>
	<p><b>Paper ID-160</b>                      Making our Voices Heard: The Art of Machine Learning for Speech Classification</p>	<p><b>Janie Wu</b>                      (University of Massachusetts Lowell)</p>
	<p><b>Paper ID-162</b>                      Automatic Digitization of Chess Scoresheets with RNNs</p>	<p><b>Jenny Zhu</b>                      (The Brearley School)</p>
	<p><b>Paper ID-166</b>                      Natural Language Processing in Environmental Health Research</p>	<p><b>Mouad Tiahi</b>                      (Northeastern University)</p>
	<p><b>Paper ID-170</b>                      Enhancing Ultrasonic Thin Film Measurement Using PCA and DFT Driven Machine Learning Models</p>	<p><b>Jollen Dai</b>                      (BRRSD)</p>

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Saturday, October 12, 2024 (Stata Center 32-123)  
 Track #1B: Technology of Computation  
 Track Co-Chairs: Shailesh Pandey, James Byleckie



EST TIME	PAPER TITLE	PRESENTERS
1:30PM - 3:30PM EST	<b>Paper ID-171</b> Resting Membrane Potential Within Single Axons as an Analog Modulator of Synaptic Transmission	Anne-Sarah Nichitiu (Dartmouth)
	<b>Paper ID-174</b> Analyzing Factors Influencing Crime Rates in Communities by Lasso Regression	Jollen Dai (BRRSD)
	<b>Paper ID-176</b> SnoozeNet: Causality-Driven Transformers for Interpretable Sleep Stage Classification	Bhavna Malladi, Aadi Hanchate (Troy High School)
	<b>Paper ID-179</b> Generative Adversarial Networks for Optimizing Air Flow and Smoke Dissipation in Buildings	Zhiheng He (Amador Valley High School)
	<b>Paper ID-182</b> MBASED: Practical Simplifications of Mixed Boolean-Arithmetic Obfuscation	Sanjana Mandadi, Nitin Krishnaswamy, Micah Nelson, Timothy Slater (The NJ Governor's School of Engineering and Technology)
	<b>Paper ID-185</b> A Multi-Channel Neural Network Architecture for Text Classification	Mohit Singh, Sharvil Limaye (Rutgers University)
	<b>Paper ID-191</b> Exploring Item-Level Heterogeneous Treatment Effects in Educational Interventions Through Machine Learning Techniques and Item Response Models	Lucas Yanney (Ranney School); Sanjit Kakarla (Hightstown High School)
	<b>Paper ID-194</b> Optimizing Reinforcement Learning Using Failure Data	Suzeyu Cui (Montclair State University)
	<b>Paper ID-227</b> Properties and Comparisons of Various Graphs and Their Codes	Elisaveta Samoylov (Dartmouth College); Layla Jarrahy (Hamilton College); Andreas Garcia (University of Arizona)
	<b>Paper ID-248</b> Vascular segmentation of kidney CT-scans through 2.5D model	Anav Bordia (Basis Independent Silicon Valley)
	<b>Paper ID-254</b> Towards a Privacy-Aware and Outsourced Fake News Detection Framework	Karsten Englander (Montclair State University)
	<b>Paper ID-280</b> Integrating python-graphblas into D4M.py	Daniel Quach (Massachusetts Institute of Technology)

TRACK #1B

IEEE MIT Undergraduate Research Technology Conference 2024  
 Technical Paper Oral Presentation Schedule



Saturday, October 12, 2024 (Stata Center 32-123)  
 Track #1C: Technology of Exploration  
 Track Chair: James Byleckie



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EST TIME	PAPER TITLE	PRESENTERS
4:00PM - 6:00PM EST	<b>Paper ID-050</b> Dynamic Prediction of Post-Wildfire Landslide Susceptibility: A Machine Learning Approach	<b>Harun Khan, Joseph Tso</b> (WT Woodson High School)
	<b>Paper ID-062</b> Computational Fluid Dynamics Analysis and Modeling of SpaceX's Starship and Raptor Engine	<b>Shloka Shriram, Jiya Patel, Gali Avni, Dhruv Kotadia</b> (NJ Governor's School of Engineering & Technology); <b>Victoria Collemi</b> (Rutgers University)
	<b>Paper ID-108</b> A Framework for Optimizing an Adaptive Scheduler for NASA Landolt Mission Observations	<b>Alexandra Boicu</b> (Thomas Jefferson High School)
	<b>Paper ID-117</b> Initial Developments of da Vinci's Cube: An Expansion of Pasteur's Quadrant	<b>Baibhav Nepal, James Mathai</b> (Virginia Tech)
	<b>Paper ID-157</b> Temporal Convolutional Networks for Exoplanet Transit Timing Variations	<b>Rahul Gupta</b> (High Technology High School)
	<b>Paper ID-183</b> Machine Learning Augmented Prediction of Saturn's Right Ascension and Declination	<b>Aditya Kirubakaran, Timothy Torubarov, Kevin Zhang, Mayank Deoras, Rishay Gupta</b> (The NJ Governor's School in the Sciences)
	<b>Paper ID-232</b> TraceGR: Modular Spacetime Imaging using Null Geodesics in Raycasting Applications	<b>Zane Beeai</b> (University of Toronto); <b>Aditya Makkar</b> (University of Waterloo)
	<b>Paper ID-030 (VIRTUAL)</b> - Technology of Sustainability CleanSpeak: Energy-Efficient Pipeline for Detoxifying Online Comments	<b>Mihir Gupta</b> (The Harker School)
	<b>Paper ID-069 (VIRTUAL)</b> - Technology of Sustainability DEEP-BLEND: Generating Adaptive Underwater Pollution Datasets	<b>Aditya Shivakumar</b> (The Harker School)
	<b>Paper ID-169 (VIRTUAL)</b> - Technology of Sustainability Analyzing Vegetation Damage From the Russo-Ukrainian War: A Geographic Information System & Remote Sensing-based Analysis	<b>Faye Hsu</b> (San Francisco University High School)
	<b>Paper ID-193 (VIRTUAL)</b> - Technology of Sustainability A Novel Machine Learning Approach for the Prediction of Optimized Energy Output on Large-Scale Wave Energy Farms	<b>Aditya Nallaparaju</b> (University of North Texas)
	<b>Paper ID-250 (VIRTUAL)</b> - Technology of Sustainability Engineering Advanced TiO <sub>2</sub> -nanoparticle Photocatalytic Systems for Efficient Methylene Blue Industrial Dye Degradation	<b>Aayush Pandey</b> (Tanglin Trust School)

TRACK #1C (In-Person and Virtual)

IEEE MIT Undergraduate Research Technology Conference 2024  
 Technical Paper Oral Presentation Schedule



Saturday, October 12, 2024 (Stata Center 32-141)  
 Track #2A: Technology of Humanity  
 Track Chair: Sreeram Dhurjaty



EST TIME	PAPER TITLE	PRESENTERS
<b>9:30AM - 12:30PM EST</b>	<p><b>Paper ID-022</b>                      A Hybrid Approach for Drug Interaction Prediction using Knowledge Graphs and Gradient Classifiers</p>	<p>Tarang Pande</p>
	<p><b>Paper ID-053</b>                      Fair Negotiation Model with Applications to Ethical Therapeutic Drug Pricing</p>	<p>Edward Lee                      (Hunter College)</p>
	<p><b>Paper ID-064</b>                      Finding Common Ground: A Two-Opinion Approach to Reducing Polarization in Networks</p>	<p>Sulekha Kishore, Anagha Satish                      (California Institute of Technology)</p>
	<p><b>Paper ID-113</b>                      Advanced 2D-LiDAR-Based Pothole Detection and Volume Analysis with an Autonomous Repair System for Smart Cities</p>	<p>Paarth Jain, Rahul Chandra, Gabriel Adelsberg, Aarav Dugar, Saanvi Suresh                      (Governor's School of NJ Program in Engineering and Technology)</p>
	<p><b>Paper ID-118</b>                      Assessing the Consistency of Open-Source Large Language Models for Algorithm Evaluation</p>	<p>Ava Moazzez (The Potomac School);                      Mihai Boicu (George Mason University)  <b>VIRTUAL: Aditya Barman; Sarah Liang; Vibhav Katikaneni; Vineel Kandala, Kashi Kamat; Achyut Nuli</b></p>
	<p><b>Paper ID-122</b>                      TremTrack: Mobile Classification of Parkinsonian Hand Tremors Using Accelerometer Data</p>	<p>Shiv Davay, Ashwath Muppa                      (Thomas Jefferson High School for Science and Technology)</p>
	<p><b>Paper ID-125</b>                      Enhancing Language Learning with Real-Time Sign Language Recognition and Feedback</p>	<p>Daniel Clapp, Liam Nasr                      (Wentworth institute of technology)</p>
	<p><b>Paper ID-126</b>                      ANALYZING THE RELATIONSHIP BETWEEN INTELLECTUAL APTITUDE AND SUSCEPTIBILITY TO COGNITIVE ILLUSIONS</p>	<p>Elbert Ho, Ryan Buschman, Joanna Chen, Yeji Kim, Erin Li, Grant Rupinski, Rishi Venkatesh, Samarth Desai                      (Governor's School of NJ in the Sciences)</p>
	<p><b>Paper ID-129</b>                      An Experimental Investigation to Fabricating Nerve Guidance Conduits for Nerve Regeneration</p>	<p>Malachi Wang, Lily Aspirany, Lauren Stelwagon, Brian Sun                      (Rutgers University)</p>

IEEE MIT Undergraduate Research Technology Conference 2024  
 Technical Paper Oral Presentation Schedule



Saturday, October 12, 2024 (Stata Center 32-141)  
 Track #2A: Technology of Humanity  
 Track Chair: Sreeram Dhurjaty



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EST TIME	PAPER TITLE	PRESENTERS
<b>9:30AM - 12:30PM EST</b>	<p><b>Paper ID-131</b>                      Automation and Simulation of 3D Microvascular Networks for Enhanced Hemodynamic Analysis</p>	<p><b>William Askin, James Sabino</b>                      (Governor's School of Engineering and Technology)</p>
	<p><b>Paper ID-144</b>                      Development of a Cost-Effective Portable Diabetes Monitoring Device for Sub-Saharan Africa</p>	<p><b>Sanjit Kakarla, Sreesamhitha Bhamidipati, Daniel Park, Shriram Vasudevan, Gajan Mohan Raj</b>                      (NJ Governor's School of Engineering and Technology)</p>
	<p><b>Paper ID-146</b>                      Formalizing Ethical Design in Prostate Cancer Image Analysis: A Preliminary Case Study</p>	<p><b>Sadie Lee</b>                      (University of British Columbia)</p>
	<p><b>Paper ID-153</b>                      Enhancing Smart Home Accessibility for People with Disabilities</p>	<p><b>Afroza Aktar</b>                      (New York City College of Technology)</p>
	<p><b>Paper ID-165</b>                      Mapping Urban Obstacles: Improving Route Accessibility for Blind and Low-Vision Pedestrians</p>	<p><b>Victor Tang</b>                      (Union County Magnet High School)</p>
	<p><b>Paper ID-177</b>                      The SFSA Ankle: A Novel Smart Fluidic Servo Actuator for Low-Cost, Low-Power, High-Efficiency Transtibial Prosthetics</p>	<p><b>Aditi Bhattamishra</b>                      (Worcester Polytechnic Institute)</p>
	<p><b>Paper ID-184</b>                      A Novel Approach to Early Detection of Dysgraphia Using Deep Learning Neural Networks</p>	<p><b>Nathan Guan</b>                      (Lake Washington High School)</p>
	<p><b>Paper ID-188</b>                      Federated Learning for Diabetic Retinopathy Diagnosis: Enhancing Accuracy and Generalizability in Under-Resourced Regions</p>	<p><b>Gajan Mohan Raj</b>                      (High Technology High School)</p>
	<p><b>Paper ID-195</b>                      Leveraging RoBERTa for Enhanced Detection and Classification of Mental Health Disorders in Social Media Posts</p>	<p><b>Vishruth Anugula, Sohan Dadana</b>                      (Lightridge High School)</p>

IEEE MIT Undergraduate Research Technology Conference 2024  
 Technical Paper Oral Presentation Schedule



Saturday, October 12, 2024 (Stata Center 32-141)  
 Track #2B: Technology of Humanity,  
 Technology of Logic, Technology of Networks  
 Track Chair: Sreeram Dhurjaty



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EST TIME	PAPER TITLE	PRESENTERS
1:30PM - 3:30PM EST	<b>Paper ID-219</b> (Technology of Humanity) A Novel Machine Learning Model for Predicting Neoantigen Immunogenicity Using T Cell Assays and Binding Affinities	<b>Timothy Torubarov, Kevin Zhang, Mayank Deoras, Rishay Gupta, Samarth Desai, Kai Kim, Aditya Kirubakaran</b> (The NJ Governor's School in the Sciences)
	<b>Paper ID-231</b> (Technology of Humanity) IntoxDetectV2: Comparative Analysis of CNNs and LLMs for Detection of Intoxication through Ocular and Facial Features Using Ensemble Learning	<b>Venkata Shaurya Mantrala</b> (Enloe High School); <b>Devang Pandey</b> (Fairview High School); <b>Idhant Gode</b> (Thomas S. Wootton High School); <b>Swayam Shah</b> (Enloe High School)
	<b>Paper ID-233</b> (Technology of Humanity) A Dynamic Web-Based Tool for Determining Climate-Resilient Design Wind Speeds	<b>Danielle Kim</b> (Bergen County Academies)
	<b>Paper ID-236</b> (Technology of Humanity) Utilizing Large Language Models to Predict ICD-10 Diagnosis Codes from Patient Medical Records	<b>Rudransh Pathak</b> (Clements High School)
	<b>Paper ID-027</b> (Technology of Logic) Analyzing and Controlling Open SIS Epidemics in Dynamic Population Networks	<b>Sarah Liaw</b> (California Institute of Technology)
	<b>Paper ID-279</b> (Technology of Logic) Eigenvalue Distribution of Max-Plus Random Matrices	<b>Daeho Lee</b> (Massachusetts Institute of Technology)
	<b>Paper ID-036</b> (Technology of Networks) Machine Learning-Based Detection of Cyber Attacks in IoMT Devices Using Diverse Network Protocols	<b>Taylor Clark</b> (Fordham University)
	<b>Paper ID-083</b> (Technology of Networks) Towards a More Secure, Private Smart Home By Eliminating the Central Hub	<b>Anna Krzyzanska</b> (Columbia University)
	<b>Paper ID-127</b> (Technology of Networks) Visual Malware Classification Using a CNN	<b>Derek Peng</b> (Troy High School)
	<b>Paper ID-167</b> (Technology of Networks) Network Activity for Parental Monitoring	<b>Romeo Tsai, Liam Estell</b> (McDaniel College)
	<b>Paper ID-238</b> (Technology of Automation) Facilitating Team Collaboration and Infrared Sensor Reliability in Autonomous Micromouse Development	<b>Dominik Fital</b> (Vaughn College of Aeronautics & Technology)

TRACK #2B

IEEE MIT Undergraduate Research Technology Conference 2024  
 Technical Paper Oral Presentation Schedule



Saturday, October 12, 2024 (Stata Center 32-141)  
 Track #2C: Technology of Automation  
 Track Co-Chairs: Shailesh Pandey, Sreeram Dhurjaty



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EST TIME	PAPER TITLE	PRESENTERS
4:00PM - 6:00PM EST	<b>Paper ID-033</b> Assisting Humans in Human-Robot Collaborative Assembly Contexts through Deep Q-Learning	<b>Weitian Wang</b> (Montclair State University)
	<b>Paper ID-035</b> MInDS: Using Large Language Models to Screen for Depression	<b>Warren Carstensen</b> (Worcester Polytechnic Institute)
	<b>Paper ID-045</b> A Novel Approach to Eliminating Hallucinations in Large Language Model-Assisted Causal Discovery	<b>Grace Sng</b> (Stony Brook University)
	<b>Paper ID-056</b> Enhancement Framework for Vision Transformers in Data Limited Cancer Detection	<b>John Patrick Capocyan</b> (William P. Clements High School)
	<b>Paper ID-067</b> Developing a Metric to Optimize LiDAR Scan Parameters: A Controlled Experimental Approach Using Boston Dynamics' SPOT	<b>Carina Pang, Joseph Kim, Alexander Savov, Twisha Patel, Shining Wang</b> (Governor's School of NJ Program in Engineering and Technology)
	<b>Paper ID-081</b> Comparative Analysis of A* and RRT* Pathfinding Algorithms for Autonomous Drone Navigation in Various Environments	<b>Nickolas Regas, Nicholas Ciordas, Colin Brennan, Will Wands, Adam Wahi Samhita Pokkunur</b> (NJ Governor's School of Program in Engineering and Technology)
	<b>Paper ID-084</b> Efficient Task Organization with Commonsense Knowledge for Human-Robot Collaborative Tasks	<b>Swagnik Roychoudhury</b> (New York University)
	<b>Paper ID-092</b> Kinematic Simulations of a Soft Robotic Prosthetic Finger	<b>Anik Banerji</b> (St. John's School)
	<b>Paper ID-115</b> Physics-Informed Neural Networks for Approximating Loss Evolution of an Artificial Neural Network: A Novel Approach to Implicit Regularization	<b>Riya Shenvi</b> (Notre Dame University)
	<b>Paper ID-143</b> Quantitative Analysis of Rubric-based Feedback Received From Claude 3.5 Sonnet on Mathematical Programming Problems	<b>Mihai Boicu</b> (George Mason University); <b>Ashwath Muppa</b> (Thomas Jefferson HS); <b>Achyut Dipukumar</b> (Chantilly HS); <b>Joel Raj</b> (JFK Memorial HS); <b>Rhea Nirmal (VIRTUAL)</b> (Freedom HS); <b>Teo Kamath (VIRTUAL)</b> (ASSIP)
	<b>Paper ID-210</b> Utilizing mmWave Radars for Autonomous Navigation of UGVs in Degraded Visual Environments	<b>Vrishak Vemuri</b> (Thomas Jefferson High School); <b>Evin Mathen</b> (Freedom High School); <b>Isabel Joseph</b> (Oakton High School)
<b>Paper ID-216</b> Biometric Identification from Error Correction Behaviors Present in Keystroke Dynamics	<b>Joseph Arrigo</b> (Rutgers University)	

TRACK #2C



IEEE MIT Undergraduate Research Technology Conference 2024  
 Technical Paper Oral Presentation Schedule



Saturday, October 12, 2024 (Stata Center 32-155)  
 Track #3A: Technology of Engineering  
 Track Co-Chairs: Denise Griffin, Adarsh Iyer



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EST TIME	PAPER TITLE	PRESENTERS
<b>9:30AM - 12:30PM EST</b>	<p><b>Paper ID-043</b>                      Identifying Potential Break-ins with Acoustics</p>	<p><b>Esteban Rodriguez</b>                      (Virginia Tech)</p>
	<p><b>Paper ID-047</b>                      An Assistive Activity Classification System to Passively Recognize and Monitor Medicine Intake Using Video Transformer</p>	<p><b>Anthony Wang</b>                      (Stratford Preparatory)</p>
	<p><b>Paper ID-054</b>                      Exploring Ultrasound-Activated Chlorin e6 for Enhanced Tumor-Targeted Therapy</p>	<p><b>Suhani Modha, Anita Patel, Emily Qin, Claire Zhu, Caitlin Johansen</b>                      (Governor's School of NJ Program in Engineering &amp; Technology)</p>
	<p><b>Paper ID-055</b>                      Optimizing Basketball Shot Trajectory using Image Segmentation Techniques for Training Feedback</p>	<p><b>Vasisht Kartik</b>                      (Lynbrook High School)</p>
	<p><b>Paper ID-077</b>                      Development of a Fully Integrated Ultrasound and Electrical Impedance Tomography Probe</p>	<p><b>Anna Filyurina</b>                      (Dartmouth College)</p>
	<p><b>Paper ID-080</b>                      The Design and Development of a Low SWaP Communications System for a 1P Cube Satellite</p>	<p><b>Joseph Harounian, Trout Marnell</b>                      (Wentworth Institute of Technology)</p>
	<p><b>Paper ID-089</b>                      Timing Mechanism for a Low-Cost, Single Use, Nucleic Acid Amplification Diagnostic Test</p>	<p><b>Savannah Gordon, Eleanor Jaffe</b>                      (Massachusetts Institute of Technology)</p>
	<p><b>Paper ID-101</b>                      Noise Cancellation Properties of Color Noises and Their Uses</p>	<p><b>Rahul Muthuraman Shanmugam</b>                      (Virginia Tech)</p>
	<p><b>Paper ID-106</b>                      Stabilization and Isolation Device for Skin and Wounds</p>	<p><b>Jessica Woyton</b>                      (Wentworth Institute of Technology)</p>

IEEE MIT Undergraduate Research Technology Conference 2024  
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Saturday, October 12, 2024 (Stata Center 32-155)  
 Track #3A: Technology of Engineering  
 Track Co-Chairs: Denise Griffin, Adarsh Iyer



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EST TIME	PAPER TITLE	PRESENTERS
<b>9:30AM - 12:30PM EST</b>	<p><b>Paper ID-133</b>                      Cellphone-Based Fourier Ptychography Microscope for Accessible High Speed Imaging</p>	<p><b>William Xu</b>                      (McMaster University)</p>
	<p><b>Paper ID-135</b>                      CAD Design and Development of a Lunar Surface Work Station</p>	<p><b>Victor Nguyen, Angelina Lin, Robeson Bennett, Kayla Simon</b>                      (NJ Governor's School of Engineering and Technology)</p>
	<p><b>Paper ID-136</b>                      Image Processing Microvascular Structures in Python</p>	<p><b>Rhea Patel, Ashley Sherman, Madison Detrick, Daisy Maturo</b>                      (The Governor's School of NJ in Engineering &amp; Technology)</p>
	<p><b>Paper ID-158</b>                      Utilizing Biometrics to Recognize Emotions in Individuals with Autism Spectrum Disorder</p>	<p><b>Nivashini Nattudurai, Unnati Seshadri (VIRTUAL)</b>                      (James Logan High School);  <b>Maya Subramoni</b> (John F. Kennedy High School)</p>
	<p><b>Paper ID-164</b>                      Optimizing Transcutaneous Carbon Dioxide Measurement Sites on Humans</p>	<p><b>Alper Y Ozbey, Nilgun Duman</b>                      (Harmony School of Innovation - Sugar Land)</p>
	<p><b>Paper ID-172</b>                      Controlled Release Transdermal Patch</p>	<p><b>Jennavieve Viglione</b>                      (Wentworth Institute of Technology)</p>
	<p><b>Paper ID-186</b>                      TuneNav: Tunable Whisker Array for Touch-based Navigation in Confined Spaces</p>	<p><b>Gauri Kshetry, Twisha Patel</b>                      (Edison High School STEM Academy)</p>
	<p><b>Paper ID-189</b>                      Developing a Drone-Based Synthetic Aperture Radar System for Imaging Near-Field Optically Obscured Environments</p>	<p><b>Chelsea Yan, Sophia Syritsyna</b>                      (Beaver Works Summer Institute)</p>
	<p><b>Paper ID-190</b>                      Design and Control of an Underwater Remotely Operated Vehicle using Thrust Force Vectors</p>	<p><b>Tedi Qafko</b>                      (Wentworth Institute of Technology)</p>

IEEE MIT Undergraduate Research Technology Conference 2024  
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Saturday, October 12, 2024 (Stata Center 32-155)

Track #3B: Technology of Engineering,  
 Technology of Sustainability

Track Chair: Maira Marques Samary



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EST TIME	PAPER TITLE	PRESENTERS
<b>1:30PM - 3:30PM EST</b>	<b>Paper ID-197</b> (Technology of Engineering) Development of a Novel Microfluidic Spinner Array for Targeted Particle Transport	<b>Allison Wang</b> (Buckingham Browne and Nichols School)
	<b>Paper ID-235</b> (Technology of Engineering) Design and Development of a Novel Multifunction Intelligent Rover for Mars	<b>Deepayan Chakraborty</b> (Cambridge Centre of International Research)
	<b>Paper ID-039</b> (Technology of Sustainability) Home Decarbonizer: Greening Household Energy Consumption Using Temporal Shifting	<b>Mihir Shenoy</b> (Amherst Regional High School)
	<b>Paper ID-040</b> (Technology of Sustainability) Optimizing the Hydro-metallurgical Extraction of Supply-Chain Critical Metals from Emulated Spent Lithium-Ion Batteries	<b>Akshay Bhaskar</b> (Plano West Senior High School)
	<b>Paper ID-061</b> (Technology of Sustainability) Growth, genetic, and phenotypic responses of Chlamydomonas and Arabidopsis to varying concentrations of and times of exposure to deoxynivalenol (DON)	<b>Henry Cantor</b> (High Technology High School)
	<b>Paper ID-074</b> (Technology of Sustainability) Experimental Investigation of Climate Change-Induced Soil Humidity Variations on Maize Stomatal Dynamic Behavior	<b>Margaret Zhou</b> (Rutgers University); <b>Ashley Kim, Abhay Sankar, Emma Grau</b> (NJ Governor's School of Engineering and Technology)
	<b>Paper ID-121</b> (Technology of Sustainability) ROOT: Reasoning Over Multimodal Agricultural Observation Data with Transformers for Effective Plant Anomaly Management	<b>Aditya Sengupta</b> (University of Illinois)
	<b>Paper ID-139</b> (Technology of Sustainability) Scale-up and Processing of a Metal-Organic Framework for Applications in Direct Air Capture of Carbon Dioxide	<b>Elliott Slaughter</b> (University of North Texas)
	<b>Paper ID-145</b> (Technology of Sustainability) Modeling and Forecasting Battery Degradation using Scientific Machine Learning for Sustainability	<b>Sharv Murgai</b> (Monta Vista High School)
	<b>Paper ID-155</b> (Technology of Sustainability) ASPIRE: A Method for Quantitatively Rating Transportation Methods in U.S. Cities	<b>Amiri Hayes</b> (New Jersey Institute of Technology)
	<b>Paper ID-173</b> (Technology of Sustainability) Utilizing Remote Sensing and Deep Neural Networks to Predict Biochemical Oxygen Demand in the Chesapeake Bay	<b>Andrew Kim, Jamie Kim</b> (C. G. Woodson High School)

**TRACK #3B**

IEEE MIT Undergraduate Research Technology Conference 2024  
 Technical Paper Oral Presentation Schedule



Saturday, October 12, 2024 (Stata Center 32-141)  
 Track #3C (VIRTUAL): Technology of Engineering,  
 Technology of Exploration, Technology of Computation  
 Track Chair: Maíra Marques Samary



Massachusetts  
 Institute of  
 Technology

EST TIME	PAPER TITLE	PRESENTERS
4:00PM - 6:00PM EST	<b>Paper ID-057 (VIRTUAL)</b> - Technology of Engineering Aligning the World's Largest Gas Electron Multipliers (GEMs) Rotator at Thomas Jefferson National Accelerator Facility	<b>Rockwell Li</b> (Ocean Lakes High School)
	<b>Paper ID-200 (VIRTUAL)</b> - Technology of Engineering A Physics-Informed Gaussian Mixture Neural Network to Extract Atomic Signals from Scanning Tunneling Microscope Images	<b>Rockwell Li</b> (Ocean Lakes High School)
	<b>Paper ID-237 (VIRTUAL)</b> - Technology of Engineering Accurate and Fast Data Rate Regulator Current Measurement	<b>Meadow Shen</b> (Lynbrook High School)
	<b>Paper ID-052 (VIRTUAL)</b> - Technology of Exploration Open-Vocabulary Segmentation for Remote Sensing	<b>Vipin Gunda</b> (Cornell University)
	<b>Paper ID-071 (VIRTUAL)</b> - Technology of Computation Correlation of Global Ocean Abiotic Factors to Petroleum Degrading Hydrocarbon Bacteria Prevalence to Create a Model for Condition-Specific Bioremediation of Soluble Oil Contaminants	<b>Vedant Kathrani</b> (Dougherty Valley High School)
	<b>Paper ID-072 (VIRTUAL)</b> - Technology of Computation Measuring the Summarization Capabilities of LLMs Using the ACT Score	<b>Anvitha Balaji</b> (Fremont High School)
	<b>Paper ID-088 (VIRTUAL)</b> - Technology of Computation Leveraging Variational Autoencoders to Identify Genes Involved with Cancer Metastasis	<b>Meghana Mandava</b> (Adlai E Stevenson High School)
	<b>Paper ID-105 (VIRTUAL)</b> - Technology of Computation A Deep Learning Approach in Predicting Seizure Type in Epileptic Patients Using EEG Signals	<b>Sailahari Mullapudi</b> (Cambridge Centre for International Research)
	<b>Paper ID-141 (VIRTUAL)</b> - Technology of Computation Deep Learning for Steganographic Image Detection	<b>Savannah Alanis</b> (UCLA)
	<b>Paper ID-142 (VIRTUAL)</b> - Technology of Computation Structural Transformation and Resilience of the Indian Economy (2014-2019) A Novel ESRS (Economic Sectoral Resilience Score) Based Input-Output Network Analysis	<b>Ishaan Gangwani</b> (Indus International School Pune)
	<b>Paper ID-201 (VIRTUAL)</b> - Technology of Computation Predicting Survival of Hemodialysis Patients using Federated Learning: A Nationwide Study	<b>Abhiram Raju</b> (Chirec International School)
<b>Paper ID-215 (VIRTUAL)</b> - Technology of Computation A Computational Approach to Assess the Effect of Training Set on Generated Molecules Using Deep Learning-driven Scaffold Hopping	<b>Victor Li</b> (University High School California)	

TRACK #3C (VIRTUAL)

IEEE MIT Undergraduate Research Technology Conference 2024  
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Sunday, October 13, 2024 (Stata Center 32-141)  
 Track #4A (VIRTUAL): Technology of Automation,  
 Technology of Networks  
 Track Chair: Qiaoyan Yu



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EST TIME	PAPER TITLE	PRESENTERS
10:30AM - 12:30PM EST	<b>Paper ID-016 (VIRTUAL)</b> - Technology of Automation AI Firefighter: A Physics Informed Decision-Making Neural Network for Optimized Firefighting on Arbitrary Landscapes	<b>Selma Emekci</b> (Pioneer High School)
	<b>Paper ID-025 (VIRTUAL)</b> - Technology of Automation Advanced LSTM Neural Networks for Predicting Directional Changes in Sector-Specific ETFs Using Machine Learning Techniques	<b>Rifa Gowani</b> (New York University)
	<b>Paper ID-073 (VIRTUAL)</b> - Technology of Automation NeuroHero: A QEEG and HRV Based Neural Network for Explainable Post-Anoxic Coma Prognosis	<b>Mithun Ganapathy Arun</b> (William Fremd High School)
	<b>Paper ID-098 (VIRTUAL)</b> - Technology of Automation Improving Architect-Specific Building Image Generation using Reinforced Data Processing	<b>Jin-kook Lee</b> (Yonsei University)
	<b>Paper ID-111 (VIRTUAL)</b> - Technology of Automation Detecting Abnormal Salinity Values in One-Dimensional Time-Series Data	<b>Vincent Pham</b> (Salisbury University)
	<b>Paper ID-168 (VIRTUAL)</b> - Technology of Automation Debiasing Low-Resource Language Models Via Cross-Lingual Transfer Learning	<b>Aadi Chauhan</b> (Bellarmine College)
	<b>Paper ID-175 (VIRTUAL)</b> - Technology of Automation A Comparative Analysis of Deep Learning Models For Weather Classification in Autonomous Driving	<b>Meadow Shen</b> (Lynbrook High School)
	<b>Paper ID-180 (VIRTUAL)</b> - Technology of Automation A Machine Learning Approach to Estimate Surface-Level NO2 Concentration using High Resolution Remote Sensing Observations	<b>Aadi Kenchammana</b> (Saint Francis High School)
	<b>Paper ID-199 (VIRTUAL)</b> - Technology of Automation A Comprehensive Comparison Between ANNs and KANs For Classifying EEG Alzheimer's Data	<b>Akshay Sunkara</b> (University of North Texas)
	<b>Paper ID-096 (VIRTUAL)</b> - Technology of Networks Obuhersys: Dynamic Analysis of Cryptographic API Misuse in Node.js	<b>Ronak Badhe</b> (University of California, Los Angeles)
	<b>Paper ID-116 (VIRTUAL)</b> - Technology of Networks ESPR: An Ethereum-Sourced Package Registry for Software Supply Chain Security	<b>Joshua Zhu</b> (University of California, Los Angeles)
	<b>Paper ID-178 (VIRTUAL)</b> - Technology of Networks Asymmetric Weighted Cascade Model for Competitive Influence Maximization	<b>Vipin Gunda</b> (Cornell University)

TRACK #4A (VIRTUAL)

IEEE MIT Undergraduate Research Technology Conference 2024  
 Technical Paper Oral Presentation Schedule



Sunday, October 13, 2024 (Stata Center 32-141)  
 Track #4B (VIRTUAL): Technology of Humanity  
 Track Chair: Qiaoyan Yu



EST TIME	PAPER TITLE	PRESENTERS
<b>1:0PM - 13:00PM EST</b>	<b>Paper ID-008 (VIRTUAL)</b> - Technology of Humanity An Insight Platform for Clinicians to Identify Outbreaks of Antimicrobial Resistant Bacteria	<b>Ajay Penugonda</b> (Rock Ridge High School)
	<b>Paper ID-024 (VIRTUAL)</b> - Technology of Humanity DigiMate: Leveraging Large Language Model AI in Geriatric Behavioral Obesity Control Therapy	<b>Ryka Chopra</b> (Mission San Jose High School)
	<b>Paper ID-028 (VIRTUAL)</b> - Technology of Humanity Measuring Repetitive Sequences: A Lempel-Ziv Compression-based Approach with Transition-Based Tokenization in Music Analysis	<b>Anton Chen</b> (Sidwell Friends School)
	<b>Paper ID-059 (VIRTUAL)</b> - Technology of Humanity 3D polymer composite of porous silicon particles for peripheral nerve regeneration with a BDNF model	<b>Saanvi Dogra</b> (Del Norte High School)
	<b>Paper ID-120 (VIRTUAL)</b> - Technology of Humanity Comparison Of Medicaid And Private Insurance On The Survival Outcomes Of Colorectal Carcinoma	<b>Rifa Gowani</b> (New York University)
	<b>Paper ID-124 (VIRTUAL)</b> - Technology of Humanity User-Centric Crowdsourcing Approach to Improve Urban Accessibility Data Collection	<b>Tyler Ortiz</b> (City College of New York)
	<b>Paper ID-128 (VIRTUAL)</b> - Technology of Humanity Doctor Who?: The Influence of AI on Human Responses to Vaccine Calls	<b>Noha Yousif</b> (James M. Bennett High School); <b>Zhiyuan Ma</b> (Mills High School)
	<b>Paper ID-196 (VIRTUAL)</b> - Technology of Humanity Precision-Controlled Soft Robotic Capsules for Targeted Chemotherapy	<b>Trisha Shivakumar</b> (The Harker School)
	<b>Paper ID-247 (VIRTUAL)</b> - Technology of Humanity Genetic Variant Effect Prediction of Major Depressive Disorder Using Large Language Models	<b>Aarushi Tiwari</b> (Research Science Institute)
	<b>Paper ID-023 (VIRTUAL)</b> - Technology of Logic Sign2Speech: A Novel Approach to Real Time Sign Language to Speech Conversion with Convolutional Neural Networks	<b>Archith Raman</b> (Edison Academy Magnet School)
	<b>Paper ID-134 (VIRTUAL)</b> - Technology of Logic Towards Forgetting and Online Unlearning	<b>Vipin Gunda</b> (Cornell University)

**TRACK #4B (VIRTUAL)**