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

URTC 2024

IEEE Advancing Technology for Humanity

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

Massachusetts Institute of Technology

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

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

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IEEE Advancing Technology for Humanity

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

Massachusetts Institute of Technology

EST TIME	PAPER TITLE	PRESENTERS
1:30PM - 3:30PM EST	**Paper ID-171** **Resting Membrane Potential Within Single Axons as an Analog Modulator of Synaptic Transmission**	**Anne-Sarah Nichitiu** (Dartmouth)
	Paper ID-174 **Analyzing Factors Influencing Crime Rates in Communities by Lasso Regression**	**Jollen Dai** (BRRSD)
	Paper ID-176 **SnoozeNet: Causality-Driven Transformers for Interpretable Sleep Stage Classification**	**Bhavna Malladi, Aadi Hanchate** (Troy High School)
	Paper ID-179 **Generative Adversarial Networks for Optimizing Air Flow and Smoke Dissipation in Buildings**	**Zhiheng He** (Amador Valley High School)
	Paper ID-182 **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)
	Paper ID-185 **A Multi-Channel Neural Network Architecture for Text Classification**	**Mohit Singh, Sharvil Limaye** (Rutgers University)
	Paper ID-191 **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)
	Paper ID-194 **Optimizing Reinforcement Learning Using Failure Data**	**Suzeyu Cui** (Montclair State University)
	Paper ID-227 **Properties and Comparisons of Various Graphs and Their Codes**	**Elisaveta Samoylov** (Dartmouth College); **Layla Jarrahy** (Hamilton College); **Andreas Garcia** (University of Arizona)
	Paper ID-248 **Vascular segmentation of kidney CT-scans through 2.5D model**	**Anav Bordia** (Basis Independent Silicon Valley)
	Paper ID-254 **Towards a Privacy-Aware and Outsourced Fake News Detection Framework**	**Karsten Englander** (Montclair State University)
	Paper ID-280 **Integrating python-graphblas into D4M.py**	**Daniel Quach** (Massachusetts Institute of Technology)

IEEE MIT Undergraduate Research Technology Conference 2024
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IEEE Advancing Technology for Humanity

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

Massachusetts Institute of Technology

EST TIME	PAPER TITLE	PRESENTERS
4:00PM - 6:00PM EST	Paper ID-050 **Dynamic Prediction of Post-Wildfire Landslide Susceptibility: A Machine Learning Approach**	**Harun Khan, Joseph Tso** (WT Woodson High School)
	Paper ID-062 **Computational Fluid Dynamics Analysis and Modeling of SpaceX's Starship and Raptor Engine**	**Shloka Shriram, Jiya Patel, Gali Avni, Dhruv Kotadia** (NJ Governor's School of Engineering & Technology); **Victoria Collemi** (Rutgers University)
	Paper ID-108 **A Framework for Optimizing an Adaptive Scheduler for NASA Landolt Mission Observations**	**Alexandra Boicu** (Thomas Jefferson High School)
	Paper ID-117 **Initial Developments of da Vinci's Cube: An Expansion of Pasteur's Quadrant**	**Baibhav Nepal, James Mathai** (Virginia Tech)
	Paper ID-157 **Temporal Convolutional Networks for Exoplanet Transit Timing Variations**	**Rahul Gupta** (High Technology High School)
	Paper ID-183 **Machine Learning Augmented Prediction of Saturn's Right Ascension and Declination**	**Aditya Kirubakaran, Timothy Torubarov, Kevin Zhang, Mayank Deoras, Rishay Gupta** (The NJ Governor's School in the Sciences)
	Paper ID-232 **TraceGR: Modular Spacetime Imaging using Null Geodesics in Raycasting Applications**	**Zane Beeai** (University of Toronto); **Aditya Makkar** (University of Waterloo)
	Paper ID-030 (VIRTUAL) - Technology of Sustainability **CleanSpeak: Energy-Efficient Pipeline for Detoxifying Online Comments**	**Mihir Gupta** (The Harker School)
	Paper ID-069 (VIRTUAL) - Technology of Sustainability **DEEP-BLEND: Generating Adaptive Underwater Pollution Datasets**	**Aditya Shivakumar** (The Harker School)
	Paper ID-169 (VIRTUAL) - Technology of Sustainability **Analyzing Vegetation Damage From the Russo-Ukrainian War: A Geographic Information System & Remote Sensing-based Analysis**	**Faye Hsu** (San Francisco University High School)
	Paper ID-193 (VIRTUAL) - Technology of Sustainability **A Novel Machine Learning Approach for the Prediction of Optimized Energy Output on Large-Scale Wave Energy Farms**	**Aditya Nallaparaju** (University of North Texas)
	Paper ID-250 (VIRTUAL) - Technology of Sustainability **Engineering Advanced TiO2-nanoparticle Photocatalytic Systems for Efficient Methylene Blue Industrial Dye Degradation**	**Aayush Pandey** (Tanglin Trust School)

TRACK #1C (In-Person and Virtual)

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

URTC 2024

IEEE Advancing Technology for Humanity

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

Massachusetts Institute of Technology

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

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

URTC 2024

IEEE Advancing Technology for Humanity

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

Massachusetts Institute of Technology

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

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

URTC 2024

IEEE Advancing Technology for Humanity

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

Massachusetts Institute of Technology

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

TRACK #2B

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

URTC 2024

IEEE Advancing Technology for Humanity

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

Massachusetts Institute of Technology

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

TRACK #2C

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

URTC 2024

IEEE Advancing Technology for Humanity

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

Massachusetts Institute of Technology

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

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

URTC 2024

IEEE Advancing Technology for Humanity

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

Massachusetts Institute of Technology

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

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

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IEEE Advancing Technology for Humanity

Saturday, October 12, 2024 (Stata Center 32-155)
Track #3B: Technology of Engineering, Technology of Sustainability
Track Chair: Maíra Marques Samary

Massachusetts Institute of Technology

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

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IEEE Advancing Technology for Humanity

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

TRACK #3C (VIRTUAL)

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

URTC 2024

IEEE Advancing Technology for Humanity

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

Massachusetts Institute of Technology

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

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

URTC 2024

IEEE Advancing Technology for Humanity

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

Massachusetts Institute of Technology

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

TRACK #4B (VIRTUAL)