

UDC RESEARCH WEEK 2023

Serving our Community Through Research

School of Engineering & Applied Sciences Research Expo

Friday, April 07, 2023 from 10:00 AM –2:30 PM
Widows Lounge, Bldg. 38 Suite 207, 4200 Connecticut Av.



Time	Research Project Title	Presenter (s), Advisor (s)
10:00 – 10:05 AM	Welcome – Dr. Victor McCrary, Vice President for Research	Dr. Victor McCrary
10:05 – 10:10 AM	Event Coordinator Welcome and Introduction	Dr. Pradeep Behera
10:10 – 10:15 AM	Welcome – Dr. Devdas Shetty, Dean, SEAS	Dr. Devdas Shetty
10:15– 10:20 AM	Welcome – Dr. Lawrence Potter, CAO	Dr. Lawrence Potter
10:20 – 10:30 AM	Experimental Investigation of Capillary Performance of Additively-Manufactured Lattice Structures for Fluid Wicking Applications <i>(Research supported by NASA)</i>	Chance Eden & Ryan Walker [BS & ABM Mechanical Engineering] Advisor: Dr. Jiajun Xu
10:30 – 10:40 AM	Security Analysis and Governance of Internet of Things	Antione Searcy [PhD Computer Science] Advisor: Dr. Anteneh Girma
10:40 – 10:50 AM	Moving towards PdNA Demonstration at Blue Plains AWWTP using Primary Sludge Fermentate <i>(Research supported by DC Water)</i>	Stephanie Fuentes [PhD Civil Engineering.] Advisor: Dr. Hossain Azam
10:50 – 11:00 AM	Novel solar cell made with earth abundant magnetic materials <i>(Research supported by NSF)</i>	Marzieh Savadkoochi [PhD Mechanical Engineering] Claudia Bahamon Lopez [BS Mechanical Engineering] Advisor: Dr. Pawan Tyagi
11:00 – 11:10 AM	Counterfactual Regret Minimization based Multiagent Decision Planning <i>(Research supported by DOD)</i>	Alexander-Reindorf, Nii-Emil [PhD Computer Science] Advisor: Dr. Paul Cotae
11:10 – 11:20 AM	Aquaponics with Scavenging Materials to Support Life Off Earth <i>(Research supported by NASA)</i>	Jonas Lee [MS Civil Engineering] Advisor:: Dr. Hossain Azam
11:20 – 11:30 AM	Study on Molecular Dynamics Simulation with boiling water and Platinum for different nanostructured surfaces <i>(Research supported by NASA)</i>	Tanjee Afreen [BS. Mechanical Engineering] Advisor: Dr. Jiajun Xu
11:30 – 11:40 AM	Ultrasound elastography evaluation of age-related muscle atrophy: An ex vivo study <i>(Research supported NIH)</i>	Bushira Musa [BS Mechanical Engineering] Advisor: Dr. Max Denis
11:40 – 11:15 AM	Chemical sensing with molecule scale nanostructures <i>(Research supported by NSF)</i>	Pius Suh [PhD Mechanical Engineering] Advisor: Dr. Pawan Tyagi
10:50 – 12:00N	Fabrication and Testing of Helium-Ion Machined Fluidic Nanochannels <i>(Research supported by NASA and NSF)</i>	Jana Catuche [MS in Mechanical Engineering] Advisor: Dr. Kate Klein
12:00- 12:10 PM	Unmanned Surface Vehicle for Bathymetric Mapping of Shallow Water Basins <i>(Research supported by DOE and DOEE)</i>	Stephanie Sougre Rouamba, Obiara Mbanefo, Shavonne Fraley, and Steve Tagheu [B.S. Electrical & Mechanical Engineering Capstone Project] Advisors: Dr. Esther Ososanya and Dr. Devdas Shetty

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12:10 - 12:20 PM	Security Analysis of Drone Communication Methodologies and Mitigating their Risk	Kymani Brown [MS Computer Science] Advisor: Dr. Anteneh Girma
12:20 - 12:30 PM	Wind-induced noise estimation of wind speed and direction within urban microspaces: Characterizing flow condition of urban environments <i>(Research supported by DoD-ARO)</i>	Lirane Mandjoupa [MS Civil Engineering] Advisor: Dr. Max Denis
12:30 - 12:40 PM	Trends Of Drone Security (Exploring the Effectiveness of Counter-Drone Technologies in Mitigating Security Threats)	Adine Barrette [MS Computer Science] Advisor: Dr. Anteneh Girma
12:40 - 12:50 PM	Gunshot detection from audio excerpts of urban sounds using transfers learning <i>(Research Supported by DoD-ARO)</i>	Jamelia Ancel [BS Biomedical Engineering] Advisor: Dr. Max Denis
12:50 – 1:00 PM	Using Machine Learning to predict the melt-pool depth using structural melt pool length data in Laser Powder Bed Fusion <i>(Research supported by DoD & NASA)</i>	Surya Arikatla [MS Computer Science] Feiyang Bai [PhD Mechanical Engineering] Advisors: Dr. Jiajun Xu and Dr. Nian Zhang
1:00 – 1:10 PM	Performance enhancement of current bio-mediated ground improvement techniques with alternative mineral precipitation <i>(Research supported by NSF)</i>	Andrae Harris [MS Civil Engineering] Advisor: Dr. Hossain Azam
1:10 – 1:20 PM	Electromagnetic radiation absorption with multilayers <i>(Research supported by NSF)</i>	Betelhiem Magesha, Arnold Feutumba, and Juan Estevez Hernandez, [BS Mechanical Engineering] Advisor: Dr. Pawan Tyagi
1:20- 1:30 PM	Deep Learning and Machine Learning in Deepfake Generation and Detection	Sandra Delancy [PhD Computer Science] Advisor: Dr. Lily Liang
POSTER PRESENTATIONS		
1:30-2:30 PM	Development of Nano-Enhanced Micro-Encapsulated Phase-Change Materials for Passive Thermal Management and Storage surfaces <i>(Research supported by NASA)</i>	Patrick Adegbaye [MS Mechanical Engineering] Advisor: Dr. Jiajun Xu
	Life Cycle Sustainability Assessment (LCSA) of Aquaponic and Hydroponic farming systems <i>(Research supported by USDA)</i>	Assefa Tadesse [MS Civil Engineering] Advisor: Dr. Hossain Azam
	Life Cycle Costing of Aquaponics and Hydroponics System; a case study on an experimental production system in the District of Columbia <i>(Research supported by USDA)</i>	Nazia Nowshin [MS Civil Engineering] Michael Somersall [PhD, CAUSES] Advisors: Dr. Hossain Azam, Dr. Sabine O' Hara
	Utilizing Game Theory to Optimize Decisions for Climate Change Uncertainties in Coastal Communities <i>(Research supported by NSF)</i>	Karla Dimitri [MS Computer Science] Advisor: Dr. Bryan Higgs

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1:30-2:30 PM	Identifying gunshot types from audio excerpts of urban sounds using transfers learning <i>(Research Supported by DoD-ARO)</i>	John Irungu [PhD Computer Science] Advisor: Dr. Max Denis
	Mobile sensing for the localization and tracking of acoustic sources in urban environments <i>(Research Supported by DoD-ARO)</i>	Dorian Davis [BS Mechanical Engineering] Advisor: Dr. Max Denis
	Acoustic sensing of wind generated vortices in urban environments <i>(Research Supported by DoD-ARO)</i>	Samba Gaye [PhD Mechanical Engineering] Advisor: Dr. Max Denis
	Ultrasound Elastography Guided Steerable Biopsy Needle <i>(Research Supported by DoD-ARO)</i>	BME Capstone Project Team: Aliyah Newby, Javaun Harriot, and Glacia Martin, Biomedical Mechanical Engineering] Advisor: Dr. Max Denis
	Remote acoustic sensing for urban air quality assessment <i>(Research Supported by DoD-ARO)</i>	Juan Estevez Hernandez [BS Mechanical Engineering] Advisor: Dr. Max Denis
	Cooperative verification of urban noise sources from generated acoustic and seismic waves <i>(Research Supported by DoD-ARO)</i>	Telha Abdulbasit [BS Mechanical Engineering] Advisor: Dr. Max Denis
	Collaborative Acoustic Sensing for Autonomous Vehicles in GPS Denies Areas: Application to Urban Environments <i>(Research Supported by DoD-ARO)</i>	Herve Sandja Tchamba [BS Mechanical Engineering] Advisor: Dr. Max Denis
	Classifying urban areas from learned acoustic and seismic data <i>(Research Supported by DoD-ARO)</i>	Hans Matthew Baes [BS Mechanical Engineering] Advisor: Dr. Max Denis
	Acoustic energy harvesting of ambient noise urban environment <i>(Research Supported by DoD-ARO)</i>	Justin An [MS Mechanical Engineering] Advisor: Dr. Max Denis
	Wireless Chemical pollution levels Monitoring system in Aquaponic system and water depth	Kaieem Anderson, Seriphap Phomsavath, and Jennifer Dail [BS Electrical Engineering] EE Capstone Project Advisors: Dr. Esther Ososanya and Dr. Tolessa Deksissa
	Design, building, and testing of nanoscale meta-material-based energy sensors <i>(Research supported by NSF & DOE)</i>	Arnold Feutmba and Bailey Garfield [BS Electrical Engineering] EE Capstone Project Advisors: Dr. Esther Ososanya and Dr. Pawan Tyagi
	Autonomous 'GREEN' MOWER'	Devon Newman, Temeche Sisaye, and Phillip Wright [BS Electrical Engineering] EE Capstone Project Advisors: Dr. Esther Ososanya
Acoustic Tracking of Pulsed Sources <i>(Research Supported by DoD-ARO)</i>	Vance M. Warren, Jr., and Javar Dougall Advisors: Dr. Esther Ososanya and	



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		Dr. Max Denis
	Portable Harness Ambulatory System	Quoc Nguyen [BS Electrical Engineering] EE Capstone Project Advisors: Drs. Esther Ososanya and Dr. Devdas Shetty
	Data Analysis of Thermography Measurements During Laser-Based Additive Manufacturing of Metals	Joseph Stilgenbauer BS Mechanical Engineering] Advisor: Dr. Jordan Weaver (NIST)

Research Centers at SEAS

- ✚ Center for Biomechanical & Rehabilitation Engineering (CBRE)
- ✚ Center of Excellence for Acoustic and Seismic Sensing of Urban Environments
- ✚ Center of Excellence for Renewable Energy
- ✚ NASA-MIRO: Center for Advanced Manufacturing in Space Technology & Applied Research at UDC (CAM-STAR)
- ✚ NSF-CREST: Center for Nanotechnology Research and Education (CNRE)
- ✚ SEAS Research Center
- ✚ Additive Manufacturing Post Processing Partnership (AMP3) Consortium
- ✚ NIST-Professional Research Experience Program (PREP)
- ✚ UDC Center of Climate Change Analytics (C³A).

Academic Program offered at SEAS

- ❖ Bachelors of Science, Biomedical Engineering [ABET Accredited]
- ❖ Bachelors of Science, Civil Engineering [ABET Accredited]
- ❖ Bachelors of Science, Computer Engineering
- ❖ Bachelors of Science, Computer Science [ABET Accredited]
- ❖ Bachelors of Science, Cyber Security
- ❖ Bachelors of Science, Electrical Engineering [ABET Accredited]
- ❖ Bachelors of Science, Information technology
- ❖ Bachelors of Science, Mechanical Engineering [ABET Accredited]
- ❖ Master of Science Civil Engineering
- ❖ Master of Science, Computer Science
- ❖ Master of Science, Electrical Engineering
- ❖ Master of Science, Mechanical Engineering
- ❖ Doctoral Degree in Engineering and Computer Science with specialization in
 - Civil Engineering
 - Electrical Engineering
 - Mechanical Engineering
 - Computer Science