

Ibrahim M. Eshera

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Citizenship: USA

Education

Ph.D Candidate, Electrical Engineering, Virginia Polytechnic Institute and State University, Expected: May 2023

B.S., Electrical Engineering, University of Maryland, May 2019

College Park Scholars, Honors Program — Science, Technology, and Society

Dean's List Academic Honors

Skills

Python, Java, C, MATLAB, Altium, Ansys Q3D, Ansys IcePack, LTSpice, TensorFlow, LiDAR, OpenGL, C++, Git, Linux, UNIX, Raspberry Pi, Arduino, SysML, CAD, Fusion360, Verilog, NI Vision Assistant, Adobe Creative Suite CS6

Honors, Awards, and Certifications

Benjamin A. Gilman International Scholarship Program, (Declined)	2018 — 2019
Engie Chuck Edwards Renewable Energy Scholarship, A. James Clark School of Engineering	2018 — 2019
Keith G. Regan Endowed Memorial Scholarship, A. James Clark School of Engineering	2018 — 2019
Fritkin Engineering Scholarship, A. James Clark School of Engineering	2018 — 2019
National Aeronautics and Space Administration (NASA) Maryland Space Grant Consortium Scholar	2018 — 2019
Armed Forces Communications and Electronics Association (AFCEA) STEM Scholarship	2018 — 2019
Dr. Norris Hekimian Memorial Scholarship in Electrical Engineering, A. James Clark School of Engineering	2017 — 2018
George Corcoran Memorial Scholarship, A. James Clark School of Engineering	2016 — 2017
Cessna Training Academy, FAA Private Pilot Certificate	2017 — Present

Work Experience

Virginia Tech, Bio-Inspired Science & Technology Center (BIST), Research Assistant July 2020 — Present

- Lead researcher on a Navy funded project to develop a prototype of fully autonomous drone by mimicking bat behavior via the integration of machine learning algorithms for path planning and autonomous space protection.
- Developing Deep Reinforcement Learning algorithm utilizing a Frequency Modulated (FM) Echo Dataset that actuates a soft robotic bat ear in order to optimize various possible ear positions .
- Directing and guiding a research team comprised of over twenty electrical, mechanical, and aerospace undergraduate and graduate students to research and develop a robotic bat-like sonar head sensor for integration with drone.

United States Army Research Laboratory, Optoelectronics and Power Electronics Division, Intern Summer 2020

- Performed research on next generation wide-bandgap devices by completing literature review of modeling, and simulation of potential future semiconductors to better fulfill the increasing power demands of the US Army in this area.
- Assisted senior researchers and Lab Director in identifying promising future areas of research in anticipation of next-generation needs, and deciding the direction of future funding for research efforts.

Virginia Tech, Center for Power Electronics Systems (CPES), Research Assistant May 2019 — May 2020

- Designed and developed Double Pulse Test (DPT) circuit board and experiment set-up to characterize high voltage switching devices up to 6kV.
- Characterized and presented results for 4.5 kV SiC Charge Balanced MOSFETs at room temperature both statically and dynamically, in partnership with General Electric (GE).
- Researched power electronics packaging for next generation semiconductor material, Gallium Oxide, in partnership with the National Science Foundation (NSF).

Ford Motor Company, Research & Advanced Engineering, Intern Summer 2018

- Developed tools in OpenGL and C++ to aid in Autonomous Vehicle and Driver Assisted Technologies (DAT).
- Integrated DAT features from LiDAR and radar sensors, such as Lane Detection, Path Planning, and Pedestrian Detection into real-time overlay of onboard camera feed.

Textron Aviation, Avionics and Electrical Systems, Intern

Summer 2017

- Developed and prototyped system in a cross-disciplinary team for the Cessna Citation Longitude that detects and warns ground handlers and pilots of obstructions and dangers in the path of the aircraft while taxiing.
- Represented Engineering Department in Intern Showcase and presented prototype to CEO & ELT.
- Individually developed a LiDAR system to create a 3D point map of any space for use in autonomous tug and taxi operations.

Bell Helicopter, Flight Technology Research & Development, Intern

Summer 2016

- Worked in OpenGL to update software written in outdated Performer code to OpenSceneGraph for an essential component of V-22 simulation software.
- Authored documentation for existing software, clarifying how software functioned and outlining improvements.
- Supported Bell's Simulation Lab for military and commercial projects, including the first commercial fly-by-wire aircraft.

United States Army Research Laboratory, Sensors and Electronics Division, Intern

Summer 2015

- Researched linearity characteristics of millimeter-wave GaN power amplifiers in order to maximize efficiency of input signals without altering the signal.
- Analyzed linearity characterization system to correct errors, debug software, and optimize user experience, thus reducing the total time to conduct a test from over 90 minutes to less than 20 minutes.
- Authored comprehensive documentation so that other labs may conduct tests for their devices using the system.