

Ian Douglas Miller

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Education

2018-Now University of Pennsylvania

PhD Electrical and Systems Engineering
Advisor: Dr. Vijay Kumar

2014-2018 Lafayette College

BS Electrical and Computer Engineering, BS Physics
Co-valedictorian, Summa Cum Laude, ECE with Honors

Honors and Awards

2016- Honor Society Memberships

Tau Beta Pi, Eta Kappa Nu, Sigma Pi Sigma

2014-2017 Dean's List, Lafayette College

2015 Eugene P. Chase Phi Beta Kappa Awardee

Awarded to a sophomore who has demonstrated scholarship as a first-year student.

2014- Marquis Scholar, Lafayette College

Awarded to "students who have demonstrated intellectual curiosity in addition to their superior academic achievement".

Publications and Presentations

2017 I. Miller and J. Wallace, "*A Self-Contained Distributed Sensing System for Swarm Robotics*" 2017 Naval Academy Science and Engineering Conference, Annapolis, MD, 2017, Poster.

2016 C. Lombardo, I. Miller and J. Wallace, "*Studying the interaction of UAS and human pilots using the X-Plane flight simulator,*" 2016 International Conference on Unmanned Aircraft Systems (ICUAS), Arlington, VA, 2016, pp. 557-561.

2015 C. Lombardo, I. Miller and J. Wallace, "*Drone Applications: Aerial Autonomous Radar Mapping and Collision Avoidance*" 2015 EXCEL Scholar's Symposium, Easton, PA, 2015, Poster.

Research Projects

2017- Self-Contained Distributed Robotics Platform Development

Lafayette College, with Prof. Jon Wallace

Designed sensor system using IR for robotics

Fabricated and tested several robots for testing

Built control software and simulation test environment for validation

Developed sensor fusion algorithm to generate global maps from local data

2015, 2017 Radar Mapping with UAVs

Lafayette College, with Prof. Jon Wallace

Developed small rail synthetic aperture radar system

Developed software for data acquisition and monitoring of data from UAV and radar

Built system for data processing and visualization once data gathering complete

Designed hardware mount system for radar onto drone chassis

Performed data gathering and testing to validate system

Work Experience

2017- Introductory Engineering Lab Assistant

Mentored first-year engineers in lab

Helped to develop curriculum and project for students

2017 Lafayette EXCEL Summer Research

Developed and built robots for swarm robotics research

Developed control and communication system for robots as well as simulation system

Built mount for Radar system on drone, wrote interface and data processing software

Technologies used: Python, NumPy, Octave, KiCad, Arduino, Kivy, Inventor

2016 Lutron Embedded Software Engineering Co-op

Developed requirements and test plan for new product

Ported and redesigned code to new embedded architecture

Utilized tools such as Bitbucket and JIRA to collaborate with team members

Technologies used: C, C++, JIRA, Git, Doxygen

2016 Physics Grader

Graded homework sets for introductory calculus-based Electromagnetics course

Other Selected Projects

2017 Automatic Shade and Light Control System

Built controller to automate existing shades

Developed protocol to control system over the internet

Technologies used: C, jQuery, Inventor

2017 "WimpFi" Networking System Design

Built simplified wireless transceiver controller in digital hardware

Performed rigorous verification and testing in hardware and simulation

Technologies used: SystemVerilog, Vivado

Service Activity

2014 Lafayette Pre-Orientation Service Program

Selected with group of roughly 30 students to come to Lafayette a week before orientation to work on service projects.

2014- Spring Break Service Trips

Various service projects over spring breaks through the DiscipleMakers Christian Fellowship. Projects have included working on renovations at the Community Center and various work at youth summer camps.

Leadership Experience

- 2016-** **Lafayette DiscipleMakers Christian Fellowship Oversight Team**
Responsibilities: Organized events, handled treasury and budget, led Bible studies, gave several talks.
- 2014-** **Lafayette College Concert Band Principal Oboe**
Responsibilities: Organized and ran sectional rehearsals.
- 2016-** **Institute of Electrical and Electronics Engineers (Lafayette Chapter) President**
Responsibilities: Worked with ECE department to run events for first-year engineers, ran soldering workshop, took group of students to Maker Faire in New York.