Full CV:

Merrill Edmonds

W.E.B. DuBois Fellow
Mechanical and Aerospace Engineering, Rutgers University
D115, 98 Brett Road, Piscataway, NJ 08854 USA
e: merrill.edmonds@rutgers.edu p: +1 (919) 257 0990

Clickable QR Code

EDUCATION

PhD Mechanical and Aerospace Engineering — Sep 2014 – Jul 2021 (Expected)
Rutgers University, Piscataway, NJ — GPA: 3.86

BSE Mechanical Engineering — Sep 2008 – May 2012
Duke University, Durham, NC — GPA: 3.65

WORK EXPERIENCE

Graduate Researcher — Jan 2015 – Present
Robotics, Automation and Mechatronics (RAM) Lab, Rutgers University — Piscataway, NJ
Advised by Dr. Jingang Yi

Research focusing on optimal control, machine learning, artificial intelligence, multirobot systems, robot vision and perception, and mobile robotics

- Designed and built agile quadcopter platform for learning-based optimal control applications
- Designed and developed multirobot/UAV testbed prototype
- Developed and studied model predictive control (MPC) based trajectory optimization method
- Built and programmed manipulator-based plant scanning system

Graduate Research Intern — May 2019 – Oct 2019
Siemens Corporate Technology Princeton — Princeton, NJ
CT RDA FOA ART-US / Future of Food

Food related research topics under the Automation Runtime Systems (ART) team.

- Design, fabrication, coding, testing related to food project in collaboration with Rutgers RAM Lab

Teaching Assistant — Sep 2015 – May 2018
Dept. of Mechanical and Aerospace Engineering, Rutgers University — Piscataway, NJ

Head TA for MAE 467/487 Senior Capstone Projects course with Prof. Assimina Pelegri.

- Responsible for: (1) course management, grading; (2) budget management, requisitions, receiving, distribution; (3) project management and advising; (4) annual MAE expo organization, logistics.
- Oversaw projects spanning all MAE topics. 240 students per class, divided into 40 groups.
- Created style guide and promotional material for the course and department.

SELECTED AWARDS AND HONORS

Siemens FutureMakers 2018 First Place, Team Leader — May 2018
Rutgers TA/GA Excellence Award — March 2017, March 2018
MAE Design and Manufacturing Leadership and Support Award — May 2016, May 2017, May 2018
Rutgers SOE W.E.B. DuBois Fellowship — April 2014

PROJECTS

Cloud-Based Autonomous Robotic Evaluation System for Agriculture App., *Project Lead* — 2018-Present
RAM Lab Agile Quadcopters, *Project Lead* — 2017-Present
Energy Harvesting Buoy, *Data Collection, Analysis, CAD* — 2011-2012
Ship Scrubbing ROV, *Design, Manufacturing, Testing* — 2011
Magnetic Levitation Controller, *Coding, Testing* — 2010
Modular Toy Design, *CAD, Prototyping* — 2008

PUBLICATIONS

C1. **M. Edmonds***, J. Yi. "Determining Spectrally-Optimal Next-Best-Views for Multi-View 3D Hyperspectral Reconstructions." In Preparation.

C2. **M. Edmonds***, J. Yi. "Learning-Based Near-Surface Modeling for Predictive Multirotor Landing Control." Submitted.

C3. **M. Edmonds***, T. Yigit, J.Yi. "Resolution-Optimal, Energy-Constrained Mission Planning for Unmanned Aerial/Ground Crop Inspections." Submitted.

C4. **M. Edmonds***, J. Yi. "Efficient Multi-Robot Inspection of Row Crops via Kernel Estimation and Region-Based Task Allocation." *Proc. IEEE Int. Conf. Robot. Autom. (ICRA)*, Xi'an, China, 2021. Accepted.

C5. **M. Edmonds***, T. Yigit, V. Hong, F. Sikandar, J. Yi. "Optimal Trajectories for Autonomous Human-Following Carts with Gesture-Based Contactless Positioning Suggestions." *Proc. Am. Control Conf. (ACC)*, New Orleans, LA, USA, 2021. Accepted.

C6. **M. Edmonds***, T. Yigit, J. Yi. "Auto-Calibrated 3D Hyperspectral Scanning Using a Heterogeneous Set of Cameras and Lights with Spectrally-Optimal Next-Best-View Planning." *Proc. Int. Conf. Autom. Sci. Eng. (CASE)*, Hong Kong, Hong Kong, 2020, pp. 863-868. Virtual Conference.

C7. S. Luo, **M. Edmonds**, J. Yi*, X. Zhou, Y. Shen. "Spline-based Modeling and Control of Soft Robots." *Proc. IEEE/ASME Int. Conf. Adv. Intell. Mech. (AIM)*, Boston, MA, USA, 2020, pp. 482-487. Virtual Conference.

C8. **M. Edmonds***, J. Yi, N. K. Singa, L. Wang. "Generation of High-Density Hyperspectral Point Clouds of Crops with Robotic Multi-Camera Planning." *Proc. IEEE Int. Conf. Autom. Sci. Eng. (CASE)*, Vancouver, BC, Canada, 2019, pp. 1475-1480.

C9. **M. Edmonds***, J. Yi. "A Model Predictive Control Based Iterative Trajectory Optimization Method for Systems with State-Like Disturbances." *Proc. Am. Control Conf. (ACC)*, Philadelphia, PA, USA, 2019, pp. 1635-1640.

PROFESSIONAL ACTIVITIES

Reviewer for

- Conferences: *IEEE Intelligent Transportation Systems Conference (ITSC)* (2019), *American Control Conference (ACC)* (2019), *IEEE/RSJ Int. Conference on Intelligent Robots and Systems Mechatronics (IROS)* (2018, 2021), *Int. Symposium on Applied Abstraction and Integrated Design (AAID)* (2017), *ASME Dynamic Systems and Control Conference (DSCC)* (2020), *IEEE Int. Conference on Advanced Intelligent Mechatronics (AIM)* (2020), *IEEE International Conference on Automation Science and Engineering (CASE) (*2020, 2021), *IEEE International Conference on Robotics and Automation (ICRA)* (2020), *Modeling, Estimation and Control Conference (MECC)* (2021)
- Journals: *IEEE Transactions on Automation Science and Engineering (T-ASE)* (2019, 2021), *Mechatronics* (2017, 2020), *IEEE Robotics and Automation Letters (RA-L)* (2020)

Leadership Positions

- IEEE/ASME AIM 2020, Volunteer Coordinator (July 2020)
- MAE Senior Capstone Projects, Head TA (2015-2018)
- Annual MAE Design & Manufacturing Expo, Organizer (2015-2018)

AFFILIATIONS

ASME Member (2013–), IEEE Student Member (2014–), Pi Tau Sigma Engineering Honor Society Pi Iota Chapter (2010–), Robert College of Istanbul / RCAAA (2008–)

CERTIFICATIONS

Engineer in Training, N.C. (2012), Preparing for the Professoriate (2015), Teaching with Technology (2015)

SKILLS

Engineering/Math Applications (MATLAB, Simulink, LabVIEW, Maple, SolidWorks, Git, Arduino IDE, ROS)
Programming Languages (C++, C, Python, Java, C#, JavaScript, CSS)
Development Libraries/Toolkits (TensorFlow/Keras, OpenCV, OpenGL, CUDA)
Languages (English: Native, Turkish: Native, German: Elementary, Spanish: Beginner, French: Beginner)