

MICHAEL SWAFFORD

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EDUCATION

Doctor of Philosophy Mechanical Engineering, University of Iowa Expected 2024
Cumulative GPA: 3.95

Master of Science Mechanical Engineering, University of Iowa 2018 - 2020
Cumulative GPA: 3.96

Bachelor of Science Mechanical Engineering, University of Iowa 2015 - 2019
Cumulative GPA: 3.75

Naval Hydrodynamics Certificate, Minor in Mathematics, Subsystem Lead Iowa Formula SAE, 6x Dean's List

WORK EXPERIENCE

Graduate Research Assistant May 2019 - Present
IIHR - Hydroscience & Engineering *Iowa City, IA*

- Designed mechanical and electrical subsystems necessary to transform a model amphibious research vehicle from marine only operation to land and sea mobility including dynamic mode switching, resulting in a 45% reduction in testing time.
- Programmed a Robot Operating System to take the same robotic vehicle from remote control only to semi-autonomous operation with an open-loop control script achieving an average 30.2% reduction in vehicle position and attitude standard deviations during surf zone environment testing.
- Presented and published the experimental methodologies and results in the proceedings of the 34th Symposium on Naval Hydrodynamics.

Aeromechanics Summer Intern Jun 2018 - Aug 2018
National Aeronautics and Space Administration *Mountain View, CA*

- Determined the first concept vertiport for urban air mobility to be studied at NASA for CFD and wind tunnel testing as the Uber Hover proposal using a first principles approach.
- Collaborated with a team of engineers on the design of a full scale computational fluid dynamics model and 1:180 physical model for wind tunnel testing of the Uber Hover concept.
- Developed the manufacturing processes to build scale model vertiports for wind tunnel testing using hot wire foam cutting and laser cut wood veneers.

LEADERSHIP

Chassis, Battery Structures, and E-Drivetrain Subsystem Lead Jan 2018 - May 2020
Iowa Formula Racing (Formula SAE) *Iowa City, IA*

- Led the development of the chassis, battery structure, and drivetrain for the University's first and second electric Formula SAE cars.
- Supported the team leads in planning and achieving key milestones, such as the critical path, technical document submissions, team sponsorship, and recruitment.

Eagle Scout Mar 2014
Boy Scouts of America *Iowa City, IA*

SKILLS & INTERESTS

Technical Skills	ROS, Python, C/C++, MATLAB/SIMULINK, SOLIDWORKS, CREO, Machine Learning
Soft Skills	Innovation, Troubleshooting, Communication Skills, Collaboration, Research
Interests	Robotics, Internet of Things, Machine Learning, Leadership, Guitar, Snowboarding