MICHAEL SCOTT FULTON

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EDUCATION

Ph.D of Computer Science August 2017 - Expected 2022
Advisor: Junaed Sattar
College of Science and Engineering, University of Minnesota-Twin Cities
Focus in robotics, field robotics, and human-robot interaction.

Bachelor of Computer Science August 2013 - May 2017
College of Arts and Sciences, Clarkson University
Minor in Mathematics

TEACHING EXPERIENCE

Teaching Interests

- Robotics (Programming, Perception, and Navigation)
- Human Robot Interaction and Interfaces
- Computer Vision
- Operating Systems
- Programming (Basics and Advanced)

Teaching Assistant, CSCI 4061 Spring 2018
Introduction to Operating Systems *University of Minnesota—Twin Cities*

- Taught weekly labs, teaching students operating systems programming concepts based on lectures.
- Conducted office hours to help students understand the course material and solve homework problems.
- Wrote a programming assignment testing students on their knowledge of socket-based network programming in C and developed grading tools for that assignment.
- Graded weekly labs and four programming assignments.
- Helped to respond to student emails and questions on a course-wide help email.
- Collaborated with professor and TA's on course material and grading policies.

Substitute Lecturer, CSCI 5551 Fall 2017
Introduction to Intelligent Robotic Systems *University of Minnesota—Twin Cities*

- Introduced students to programming for ROS (Robot Operating System).
- Explained core concepts of ROS including nodes, topics, services, messages, and the ROS graph.
- Covered simple ROS command line tools and ROS build system.

Substitute Lecturer, CS 141 Fall 2016
Introduction To Computer Science *Clarkson University*

- Introduced basic programming concepts such as variables, types, and data representation.
- Reviewed concepts including loops and flow control.
- Provided informal tutoring for a number of students in this course through the semester.

Workshops and Seminars Fall 2015-Fall 2016
Clarkson Open Source Institute *Clarkson University*

- Taught workshops covering topics such as computer vision and Android development basics.
- Taught a series of workshops covering simple robotics concepts and ROS use.
- Gave a number of brief, informative talks on subjects in computer science.
- Lead a number of other short workshops and exploratory work sessions.

RESEARCH EXPERIENCE

Research Interests

- Human-robot interaction in challenging, unstructured environments, particularly underwater.
- Object detection and robot perception for marine fauna and litter.
- Development of new field robots for specific tasks and domains.
- Heterogeneous teams of multi-domain field robots for coordinated task completion.
- Application of field robotics to biological field science.

Graduate Research Assistant August 2017-Present
Interactive Robotics and Vision Lab — Junaed Sattar *University of Minnesota—Twin Cities*

- Explored methods for underwater object detection for use in marine trash detection and cleanup.
- Prototyped an algorithm for localization of an AUV using bathymetric maps and observations.
- Created a new method for communicating information from an AUV to a human using motion.
- Researched algorithms and methods for underwater localization, object detection, and interaction.
- Maintained and improved a variety of robots, both in terms of software and hardware.
- Coordinated lab experimental trials in pools, lakes, and ocean.

Undergraduate Research Assistant January 2015 - March 2016
RAIL Lab — Junaed Sattar *Clarkson University*

- Designed and explored vision algorithms for lane identification in driving videos.
- Developed a system for recording video, location, and accelerations while driving.
- Collected, organized, and analyzed over 200 GB of driving data.

FELLOWSHIPS AND AWARDS

- NSF Graduate Research Fellowship September 2019 - Present
- UMN Graduate School Excellence Research Grant September 2019 - Present
- Graduate Assistance in Areas of National Need Fellowship September 2018 - September 2019
- Miller/Davis Service Award for Computer Science, Clarkson University May 2017

SCHOLARSHIP

Conference Publications

- Jungseok Hong, **Michael Fulton**, Junaed Sattar. *A Generative Approach Towards Improved Robotic Detection of Marine Litter.* International Conference on Robotics and Automation, Paris, 2020.
- **Michael Fulton**, Chelsey Edge, Junaed Sattar. *Robot Communication Via Motion: Closing the Underwater Human-Robot Interaction Loop.* International Conference on Robotics and Automation, Montreal, 2019.

– **Michael Fulton**, Jungseok Hong, Md Jahidul Islam, Junaed Sattar. *Robotic Detection of Marine Litter Using Deep Visual Detection Models.* International Conference on Robotics and Automation, Montreal, 2019.
– Md Jahidul Islam, **Michael Fulton**, Junaed Sattar. *Towards a Generic Diver-Following Algorithm: Balancing Robustness and Efficiency in Deep Visual Detection.* International Conference on Robotics and Automation, Montreal, 2019.

Presentations

– **Michael Fulton**. *Robot Communication Via Motion: Closing the Underwater Human-Robot Interaction Loop.* University of Minnesota — Twin Cities, Visual Computing and Artificial Intelligence Seminar [VCAI]

Interactive Presentation Sessions

– **Michael Fulton**, Chelsey Edge, Junaed Sattar. *Robot Communication Via Motion: Closing the Underwater Human-Robot Interaction Loop.* International Conference on Robotics and Automation, Montreal, 2019.
– **Michael Fulton**, Jungseok Hong, Md Jahidul Islam, Junaed Sattar. *Robotic Detection of Marine Litter Using Deep Visual Detection Models.* International Conference on Robotics and Automation, Montreal, 2019.
– Md Jahidul Islam, **Michael Fulton**, Junaed Sattar. *Towards a Generic Diver-Following Algorithm: Balancing Robustness and Efficiency in Deep Visual Detection.* International Conference on Robotics and Automation, Montreal, 2019.

SERVICE

Computer Science Graduate Student Association Fall 2019-Present
Student Officer *University of Minnesota*

– Planned and managed social events for the computer science graduate student association.

Graduate Research and Discussion Seminar Spring 2019-Present
Coordinator *University of Minnesota*

– Managed a bi-weekly seminar for graduate students to present their work.
– Coordinated speakers, announced seminars, solicited support from local business, and purchased food for bi-weekly seminars.

MNDrive Scholars Tech Camps Summer 2018
Counselor for middle school STEM camp *University of Minnesota*

– Taught STEM concepts, including circuits, simple Arduino programming, and soldering to children from local middle schools.
– Developed and improved curriculum for future summer tech camps.

Clarkson Open Source Institute August 2015 - May 2017
Lab Director and Member *Clarkson University*

– Director from October 2015 to April 2017, responsible for day-to-day lab operations, meetings, events.
– Mediated discussions and performed conflict resolution when necessary.
– Founded COSI Project For Robotics, Beowulf Cluster interest group.
– Taught basic robotics programming to fifteen students over the years.

IMPETUS Summer Roller Coaster Camp Summer 2014, Summer 2015
Counselor for middle school STEM camp for underprivileged children *Clarkson University*

– Taught STEM concepts, simple mathematics and physics to middle and junior high school children.
– Acted as a general counselor to under-privileged students, teaching encouraging them in the pursuit of higher education and careers in STEM.

INDUSTRY EXPERIENCE

Software Engineering Intern at C Speed LLC. May 2016 - August 2016
Programming with C#, ASP.NET, Java, JavaFX *Liverpool, NY*

– Developed a system for managing over 1 TB of operating system image backups.
– Took part in development of internal time-logging web application.
– Researched programming interfaces for a RF test device, both their usability and construction.

REFERENCES AVAILABLE UPON REQUEST

Built with LaTeX