Md Jahidul Islam

Assistant Professor (Tenure-Track)
Department of Electrical and Computer Engineering (ECE)
University of Florida, Gainesville, FL, US

Contact Information

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Current Employment 01/01/2022 - Present

Title Assistant Professor (Tenure-Track)
Employer University of Florida (UF)
Department Electrical and Computer Engineering (ECE)
College The Herbert Wertheim College of Engineering (HWCOE)
Address 1250 East Campus Office Building | P.O. Box 113201 | Gainesville, FL 32611, US

Job Responsibilities

- Establishing a productive research program in my areas of expertise: robot perception, machine vision, underwater robotics, and artificial intelligence.
- Collaborating with other ECE faculty members and UF research organizations such as the Center for Coastal Solutions (CCS) and the Warren B. Nelms Institute.
- Teaching courses at the undergraduate and graduate levels at ECE, UF:
  - EEL 4745C: Microprocessor Applications 2 (Fall 2022)
  - EEL 4930/5934: Autonomous Robots (Spring 2023)
- Taking part in service activities for the ECE Department and at the HWCOE.

Previous Employment: Industry 06/14/2021 - 11/19/2021

Title Research Scientist 2
Employer Robert Bosch LLC
Address 384 Santa Trinita Ave | Sunnyvale, CA 94085, US
Job Responsibilities

- Worked on two research projects with the CR/RHI3-NA team toward designing machine perception algorithms for various mixed reality and robotics applications.
- Developed both hardware and software-based solutions to enable perception capabilities of multiple robotics products and services that Bosch provides.

Previous Employment: Academia 05/21/2012 - 08/08/2015

Title Assistant Professor and Lecturer
Employer United International University (UIU)
Department Computer Science & Engineering (CSE)
Address United City, Madani Ave. | Dhaka 1212, Bangladesh
Job Responsibilities

- Taught undergraduate students at the Dept. of CSE, UIU.
- Mentored two research groups in their undergraduate thesis.

Education

Ph.D. in Computer Science [08/26/2015 - 05/31/2021]

University of Minnesota (UMN), Twin Cities, US

Dissertation Topic *Machine Vision for Improved Human-Robot Cooperation in Adverse Underwater Conditions. Advised by: Dr. Junaed Sattar.*

Research Appointments

- Graduate Research Assistant (GRA) at the Interactive Robotics and Vision Lab, UMN.
  - Semesters: Summer 2017, Fall 2018-20, and Summer 2020 - Spring 2021.
  - Tasks: worked on sponsored research projects and participated in robotic field trials.
  - Sponsored projects: National Science Foundation (NSF) IIS-1845364 and IIS-1637875.

Teaching Appointments

- Graduate Teaching Assistant (GTA) at the Dept. of CSE, UMN.
  - Semesters: Fall 2016, Fall 2017, and Spring 2018.
  - Tasks: prepared and graded tests, held office-hours, and conducted occasional lectures.
  - Courses: Introduction to Intelligent Robotic Systems; Introduction to C/C++ Programming.

Summer Internships

- Summer 2019 Interim Engineering Intern.
  - Company: Qualcomm Technologies, Inc. Santa Clara, CA, USA.
  - Experience: worked with the Glance team on ultra-low powered machine vision.
- Summer 2018 Research & Development (R&D) Intern.
  - Company: 3M Corporate Research Systems Lab. Maplewood, MN, USA
  - Experience: Worked with the AI group on visual and corpus data analysis.

M.Sc. in Computer Science & Engineering (CSE) [05/30/2012 - 02/04/2015]

Bangladesh University of Engineering and Technology (BUET)

Thesis Topic *Intelligent DSA by Exploiting a Synergy between Genetic Algorithm and Local Search. Advised by: Dr. Md. Monirul Islam and Dr. A. B. M. Alim Al Islam.*

B.Sc. in Computer Science & Engineering (CSE) [06/09/2007 - 04/01/2012]

Bangladesh University of Engineering and Technology (BUET)

Thesis Topic *Self-adaptive and Genetically Programmed Differential Evolution. Advised by: Dr. Md. Monirul Islam.*

Honors and Awards

2022 Outstanding reviewers of 2022: Reviewer In Excellence Award, IEEE Journal of Oceanic Engineering (JOE).

2019-20 Doctoral Dissertation Fellowship (DDF), Dept. of CSE, University of Minnesota, USA.

2019 RAS travel grant for ICRA 2019 in Montreal, Canada.

2017 IEEE/RSJ travel grant for IROS 2017 in Vancouver, Canada.

2015-16 ADC graduate fellowship, Digital Technology Center (DTC), University of Minnesota, USA.

2012-13 Runner-up. Int. Robotics Challenge (IRC) grand finale, Techfest, IIT-Bombay, India.

2012 Champion. Bangladesh regional of IRC, IEEE student branch, BUET, Bangladesh.

2006 Odyssey honorary award. English club, Notre Dame College (NDC), Dhaka, Bangladesh.

2004 1st Gold medalist. Sher-e-Bangla government boys' high school, Dhaka, Bangladesh.

Research Publications

Peer-reviewed Journal Articles

[J1] **M. J. Islam**, J. Mo, and J. Sattar. *Robot-to-Robot Relative Pose Estimation using Humans as Markers*. The Autonomous Robots (AuRo), 45(4), pp. 579–593, 2021. [* DOI: 10.1007/s10514-021-09985-6. * Impact Factor: 3.602]

[J2] J. Mo, **M. J. Islam**, and J. Sattar. *Fast Direct Stereo Visual SLAM*. The IEEE Robotics and Automation Letters (RA-L), 7 (2), pp. 778-785, 2021. [* DOI: 10.1109/LRA.2021.3133860. * Impact Factor: 3.74]

[J3] **M. J. Islam**, Y. Xia, and J. Sattar. *Fast Underwater Image Enhancement for Improved Visual Perception*. The IEEE Robotics and Automation Letters (RA-L), 5 (2), pp. 3227-3234, 2020. [* DOI: 10.1109/LRA.2020.2974710. * Impact Factor: 3.61]

[J4] **M. J. Islam**, J. Hong, and J. Sattar. *Person Following by Autonomous Robots: A Categorical Overview*. The International Journal of Robotics Research (IJRR), 38 (14), 2019. [* DOI: 10.1177/0278364919881683. * Impact Factor: 6.134]

[J5] **M. J. Islam**, M. Fulton, and J. Sattar. *Towards a Generic Diver Following Algorithm: Balancing Robustness and Efficiency in Deep Visual Detection*. The IEEE Robotics and Automation Letters (RA-L), 4 (1), pp. 113-120, 2018. [* DOI: 10.1109/LRA.2018.2882856. * Impact Factor: 5.499]

[J6] **M. J. Islam**, M. Ho, and J. Sattar. *Understanding Human Motion and Gestures for Underwater Human-Robot Collaboration*. The Journal of Field Robotics (JFR), 2018. [* DOI: 10.1002/ROB.21837. * Impact Factor: 4.345]

[J7] A. B. M. A. A. Islam, **M. J. Islam**, N. Nurain, and V. Raghunathan. *Channel Assignment Techniques for Multi-Radio Wireless Mesh Networks: A Survey*. The IEEE Communications Surveys and Tutorials (IEEE ComST), pp. 988-1017, 2016. [* DOI: 10.1109/COMST.2015.2510164. * Impact Factor: 22.973]

Peer-reviewed Conference Papers

[C1] **M. J. Islam**, R. Wang and J. Sattar. *SVAM: Saliency-guided Visual Attention Modeling by Autonomous Underwater Robots*. Robotics: Science and Systems (RSS), July 2022, New York, USA.

[C2] J. Mo, **M. J. Islam** and J. Sattar. *IMU-Assisted Learning of Single-View Rolling Shutter Correction*. Conference on Robot Learning (CoRL), 2021.

[C3] **M. J. Islam**, P. Luo, and J. Sattar. *Simultaneous Enhancement and Super-Resolution of Underwater Imagery for Improved Visual Perception*. The Robotics: Science and Systems (RSS), July 2020, Virtual.

[C4] **M. J. Islam**, C. Edge , Y. Xiao, P. Luo, M. Mehtaz , C. Morse, S. Enan, and J. Sattar. *Semantic Segmentation of Underwater Imagery: Dataset and Benchmark*. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), October 2020, Virtual.

[C5] **M. J. Islam**, S. S. Enan, P. Luo, and J. Sattar. *Underwater Image Super-Resolution using Deep Residual Multipliers*. IEEE International Conference on Robotics and Automation (ICRA), May 2020, Virtual.

[C6] **M. J. Islam**, M. Ho, and J. Sattar. *Dynamic Reconfiguration of Mission Parameters in Underwater Human-Robot Collaboration*. IEEE International Conference on Robotics and Automation (ICRA), pp. 1-8, May 2018, Brisbane, Australia.

[C7] C. Fabbri, **M. J. Islam**, and J. Sattar. *Enhancing Underwater Imagery Using Generative Adversarial Networks*. IEEE International Conference on Robotics and Automation (ICRA), pp. 7159-7165, 2018, Brisbane, Australia.

[C8] **M. J. Islam** and J. Sattar. *Mixed-domain Biological Motion Tracking for Underwater Human-Robot Interaction*. IEEE International Conference on Robotics and Automation (ICRA), pp. 4457-4464, May 2017, Singapore.

[C9] F. Shkurti, W. Chang, P. Henderson, **M. J. Islam**, J. C. G. Higuera, J. Li, T. Manderson, A. Xu, G. Dudek, and J. Sattar. *Underwater Multi-Robot Convoying using Visual Tracking by Detection*. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), pp. 4189-4196, September 2017, Vancouver, Canada.

Community Services

Peer-reviewed Journal Reviewer

- IEEE Journal of Oceanic Engineering (JOE)
- IEEE Transactions on Robotics (T-RO)
- IEEE Transactions on Image Processing (T-IP)
- IEEE Robotics and Automation Letters (RA-L)
- IEEE Signal Processing Letters (SP-L)
- IEEE Transactions on Industrial Electronics (T-IE)
- IEEE Transactions on Circuits and Systems for Video Technology (T-CSVT)
- Elsevier Signal Processing: Image Communication (SPIC)
- IEEE Access

Peer-reviewed Conference Reviewer

- IEEE International Conference on Robotics and Automation (ICRA)
- IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
- IEEE International Conference on Multimedia and Expo (ICME)
- Conference on Robots and Vision (CRV)
- Conference on Robot Learning (CoRL)

Community Memberships

- IEEE (Institute of Electrical and Electronics Engineers)
- IEEE RAS (Robotics and Automation Society) and OES (Oceanic Engineering Society)
- TinyML Community

Talks and Presentations

Invited Talks

- **04/22:** Speaker, AI in Smart Engineered Systems Mini Symposium, University of Florida, US.
- **03/22:** Seminar Talk, Harbor Branch Oceanographic Institute, Florida Atlantic University, US.

Conferences Presentations

- **07/22:** Oral presentation of paper [C1] at the RSS 2022, New York City, NY, US (in person).
- **07/20:** Oral presentation of paper [C3] at the RSS 2020 (virtual).
- **08/20:** Oral presentation of paper [C4] at the IEEE/RSJ IROS 2020 (virtual).
- **05/20:** Oral presentation of paper [C5] at the IEEE ICRA 2020 (virtual).
- **05/19:** Oral presentation of paper [J5] at the IEEE ICRA 2019, Montreal, Canada (in person).
- **06/18:** Oral presentation of paper [C6] at the IEEE ICRA 2018, Brisbane, Australia (in person).
- **06/17:** Oral presentation of paper [C8] at the IEEE ICRA 2017, Singapore (in person).

Poster Presentations

- **03/18:** Poster presentation on “Robo-Chat-Gest Language", MnDrive Symposium, UMN.
- **03/17:** Poster presentation on “The MDPM Tracker" at MnDrive Symposium, UMN.

Collaboration Experiences

Current collaborating institutes

- Warren B. Nelms Institute, University of Florida.
- Center for Coastal Solutions (CCS), University of Florida.
- Autonomous Field Robotics Lab (AFRL), University of South Carolina.
- Harbor Branch Oceanographic Institute (HBOI), Florida Atlantic University (FAU).
- Mote Marine Laboratory, Sarasota, Florida.
- Whitney Laboratory, University of Florida.
- Tampa Bay Estuary Program, St. Petersburg, Florida.

Past collaborations

- IRVLab, University of Minnesota: Single view Rolling Shutter Correction (2020-21)
    - Led by Dr. Jiawei Mo.
    - He is now an applied scientist at AWS AI, Amazon.
- IRVLab, University of Minnesota: GANs for Underwater Image Enhancement (2017-18)
    - Led by Cameron Fabbri.
    - He is now working as a ML Researcher at 3M.
- Mobile Robotics Lab, McGill University: Underwater Multi-Robot Convoying (2016-17)
    - Led by Dr. Florian Shkurti.
    - He is now an Assistant Professor at the University of Toronto, Canada.

Participation in Marine Robotics Field Trials

01/2019 & 01/2018: International marine robotics field trials
- Organized by the Bellairs Research Institute (see https://www.mcgill.ca/bellairs/)
- At Holetown, Barbados

Student Advising and Mentoring Experiences

Current students

- Boxiao Yu, Ph.D. student, ECE, UF (Spring 2022 - Present).
- Adnan Abdullah, Ph.D. student, ECE, UF (Starting Fall 2022).
- Catalina Murray, Ph.D. student, ECE, UF (Starting Fall 2022).
- Jiayi Wu, Masters student, ECE, UF (Spring 2022 - Present).
- Ailani G Morales, Undergraduate student, ECE, UF (Spring 2022 - Present).
- Zhenqi Wu, Masters student, ECE, UF (Spring 2022 - Present).
- Ishaan Sing, Masters student, ECE, UF (Spring 2022 - Present).
- Ghanshyam Sookai, Undergraduate student, ECE, UF (Independent study; Spring 2022).
- Patrick Argento, Undergraduate student, ECE, UF (Independent study; Summer 2022).

Past mentee

- Peigen Luo: UG student, UMN (2019-20); he is now a software engineer at Google.
- Youya Xia: UG student, UMN (2018-19); she is now a graduate student at Cornell.
- Ruobing Wang: UG student, UMN (2019-21); he is now a software engineer at Amazon.
- Yuyang Xiao: UG student, UMN (2019-20); he is now a graduate student at UIUC.
- Marc Ho: Masters student, UMN (2017-18); he is now a data engineer at Optum.
- Muntaqim Mehtaz and Christopher Morse: undergraduate students at the UMN.

Hardware and Software Skills

- **Programming Languages:** Python, C++/C, Java, MATLAB, Unix Shell
- **Deep Learning Libraries:** TesorFlow 1.14+, Keras 2.2+, PyTorch 1.5+
- **Embedded AI devices:** Nvidia Jetson TX2/Nano/Xavier, Google Coral Edge TPU
- **Computer Vision Libraries:** OpenCV, Torch Vision
- **Robot Operating System (ROS):** ROS Kinetic and ROS2
- **Robot Platforms:** AQUA, OpenROV, BlueROV2, Chasing M2
- **Operating System:** Linux(Ubuntu), iOS, Windows