

Curriculum Vitae

JUNAED SATTAR
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Education

PhD, McGill University, Montreal, Quebec, Canada. Computer Science, Robotics June 2012
Dissertation/Thesis Title: A vision-based framework for robust human-robot interaction
Advisor: Gregory L Dudek

MS, McGill University, Montreal, Quebec, Canada. Computer Science, Robotics June 2006
Dissertation/Thesis Title: A visual servoing system for an amphibious legged robot
Advisor: Gregory L Dudek

BS, Bangladesh University of Engineering and Technology, Dhaka, N/A, Bangladesh. Computer Science and Engineering August 2001

Languages: English, Bengali, Hindi

Fellowships, Residencies, and Visiting Engagements

Fellowship

FRQNT Post Doctoral Fellow January 1, 2012 - June 30, 2014
Quebec Research Funds for Natural Science and Engineering, Computer Science
University of British Columbia

Industrial Research and Development Fellowship (IRDF) September 1, 2010 - August 31, 2012
National Science and Engineering Research Council of Canada
Declined

Doctoral Fellowship May 1, 2008 - April 30, 2011
Québec Research Funds for Natural Sciences and Engineering, Computer Science

Academic Appointments

University of Minnesota Twin Cities, Computer Science and Engineering: Assistant Professor January 2016 - Present

Clarkson University, Computer Science: Assistant Professor August 2014 - December 2015

The University of British Columbia, Computer Science: Post-Doctoral Fellow January 2012 - June 2014

McGill University, Computer Science: Course Lecturer January 2007 - December 2009

Courses Taught:
COMP322 (Introduction to C++, Fall 2007, Spring and Fall 2008), COMP 417 (Spring 2007)

Brac University, Computer Science and Engineering: Course Lecturer September 2001 - July 2003

Courses Taught:
COMP 110: Programming Languages I: C (Fall 2001),
COMP 115: Programming Languages II: C++ (Spring 2002), COMP 211: Introduction to Algorithms (Fall 2002),
COMP 311: Microprocessors (Spring 2003)

Other Professional Positions

Iponics Bangladesh Inc System Analyst June 2000 - July 2001

Consulting

For-Profit Organization, Kinsol Research Inc January 1, 2012 - December 31, 2012
Victoria, British Columbia, Canada.

Current Membership in Professional Organizations

Institute of Electrical and Electronics Engineers June 1, 2004 - Present

HONORS AND RECOGNITION

External Sources

Best Presentation Award, "From the Deep Seas to Our Homes– Towards a Seamless Interface for Human-Machine Interaction", University of British Columbia September 14, 2012
\$150

Best Robotics Paper Award, International Conference on Computer and Robot Vision May 27, 2009
\$0

RESEARCH, SCHOLARSHIP, AND CREATIVE WORK

Grants, Contract, Awards: External Sources

Award: NRI: Enhancing Autonomous Underwater Robot Perception for Aquatic Species Management.

Principal Investigator: Sattar, Junaed

Status: Accepted

Sponsoring Organization: THE NATIONAL SCIENCE FOUNDATION

Award Dates: January 1, 2023 - December 31, 2026

Award: Agricultural Weed Control Using Autonomous Mowers- Phase 2

Status: Accepted

Sponsoring Organization: LEGISLATIVE-CITIZEN COMMISSION ON MN RES

Award Dates: July 1, 2019 - August 30, 2022

Project: Agricultural Weed Control Using Autonomous Mowers- Phase 2

Project Team: Junaed Sattar (Co-Investigator), Eric Buchanan (Principal),
Jonathan Chaplin (Co-Investigator), Ibrahim Isler (Co-Investigator)

Status: Approved

Project Dates: July 1, 2019 - August 30, 2022

Award: NRI: Collaborative Research: Autonomous Quadrotors for 3D Modeling and Inspection of Outdoor Infrastructure

Principal Investigator: Sattar, Junaed

Status: Accepted

Sponsoring Organization: THE NATIONAL SCIENCE FOUNDATION

Award Dates: September 1, 2016 - August 31, 2022

1. **Project: NRI: Collaborative Research: Autonomous Quadrotors for 3D Modeling and Inspection of Outdoor Infrastructure**

Project Team: Junaed Sattar (Principal), Peter Seiler Jr (Co-Investigator),
Stergios Roumeliotis

Status: Approved

Project Dates: September 1, 2016 - August 31, 2022

2. **Project: NRI: Collaborative Research: Autonomous Quadrotors for 3D Modeling and Inspection of Outdoor Infrastructure**

Project Team: Junaed Sattar (Principal), Stergios Roumeliotis

Status: Approved

Project Dates: September 1, 2016 - August 31, 2022

Award: EAGER: Towards robust and natural underwater human-robot interaction

Principal Investigator: Sattar, Junaed

Status: Accepted

Sponsoring Organization: THE NATIONAL SCIENCE FOUNDATION

Award Dates: May 15, 2019 - April 30, 2021

1. **Project: EAGER: Towards robust and natural underwater human-robot interaction**

Project Team: Junaed Sattar (Principal)

Status: Approved

Project Dates: May 15, 2019 - April 30, 2021

2. **Project: REU Supplement - EAGER Towards**

Project Team: Junaed Sattar (Principal)

Status: Approved

Project Dates: May 15, 2019 - April 30, 2021

Pending/Submitted:

Proposal: Marine Debris Detection, Mapping, and Removal using Intelligent Autonomous Underwater Robotic Systems.

Role: Principal

Proposal ID:

Status: Submitted

Sponsoring Organization: National Oceanic and Atmospheric Administration (NOAA)

Date Submitted: October 27, 2022

Purpose: Research

Proposal: Automated weed management for herbicide water runoff reduction

Role: Principal

Proposal ID: CON00000092748

Status: Submitted

Sponsoring Organization: LEGISLATIVE-CITIZEN COMMISSION ON MN RES

Date Submitted: March 31, 2021

Purpose: Research

Proposal: Task-driven Enhancement of Degraded Vision for Robotic Detection of Marine Debris.

Role: Principal

Proposal ID:

Status: Submitted

Sponsoring Organization: Amazon Research Award

Date Submitted: September 14, 2021

Purpose: Research

Publications

Asterisk() - indicates co-first author*

Underline - indicates student author

Peer-Reviewed Journal Article

Mo, J. (Lead Author), Islam, M. J., & Sattar, J. *Fast Direct Stereo Visual SLAM. IEEE Robotics and Automation Letters (RA-L)*. 7(2), 778-785, doi:10.1109/LRA.2021.3133860.

Fulton, M. S. (Lead Author), Edge, C. M., & Sattar, J. Robot Communication Via Motion: A Study on Modalities for Robot-to-Human Communication in Field Environments. *ACM Transactions on Human-Robot Interaction*. Volume 11, Issue 2, No. 15, Pages 1-40, June 2022. <https://doi.org/10.1145/3495245>

Islam, M. J., Mo, J., & Sattar, J. (2021). Robot-to-Robot Relative Pose Estimation using Humans as Markers. *Autonomous Robots*, 45, 579–593.
[doi: https://doi.org/10.1007/s10514-021-09985-6](https://doi.org/10.1007/s10514-021-09985-6)

Islam, M. J., Xia, Y., & Sattar, J. (2020). Fast Underwater Image Enhancement for Improved Visual Perception. *IEEE Robotics and Automation Letters*, 5(2), 3227-3234.
[doi: 10.1109/LRA.2020.2974710](https://doi.org/10.1109/LRA.2020.2974710)

Islam, M. J., Hong, J., & Sattar, J. (2019). Person Following by Autonomous Robots: A Categorical Overview. *International Journal of Robotics Research*, 38(14), 1581-1618.
[doi: 10.1177/0278364919881683](https://doi.org/10.1177/0278364919881683)

- Islam, M. J., Ho, M., & Sattar, J. (2019). Understanding human motion and gestures for underwater human–robot collaboration. *Journal of Field Robotics*, 36(5), 851-873. doi: [10.1002/rob.21837](https://doi.org/10.1002/rob.21837)
- Islam, M. J., Fulton, M. S., & Sattar, J. (2019). Towards a Generic Diver-Following Algorithm: Balancing Robustness and Efficiency in Deep Visual Detection. *IEEE Robotics and Automation Letters*, 4(1), 113-120. doi: [10.1109/LRA.2018.2882856](https://doi.org/10.1109/LRA.2018.2882856)
- Sattar, J., & Dudek, G. (2017). Visual Identification of Biological Motion for Underwater Human-Robot Interaction. *Autonomous Robots*, 42(1), 111-124. doi: <https://doi.org/10.1007/s10514-017-9644-y>
- Sattar, J., Giguère, P., & Dudek, G. (2009). Sensor-Based Behavior Control for an Autonomous Underwater Vehicle. *International Journal of Robotics Research*, 28(6), 701–713. doi: 10.1007/978-3-540-77457-0_25
- Dudek, G., Giguère, P., Prahacs, C., Saunderson, S., Sattar, J., Torres-Mendez, L.-A., . . . Georgiades, C. (2007). Aqua: An Amphibious Autonomous Robot. *IEEE Computer Magazine*, 40(1), 46–53. doi: 10.1109/MC.2007.6.

Conference Proceeding

- Enan, S. S. (lead Author), Fulton, M. S., & Sattar, J. *Robotic Detection of a Human-Comprehensible Gestural Language for Underwater Multi-Human-Robot Collaboration*. Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2022), Kyoto, Japan, October 2022. In Press.
- Islam, M. J. (Lead Author), Wang, R., and Sattar, J. *Saliency-guided Visual Attention Modeling by Autonomous Underwater Robots*. Proceedings of the Robotics: Science and Systems Conference XVIII (RSS 2022), New York, NY, June 2022. Acceptance rate:
- Islam, M. J. (Lead Author), Wang, R., and Sattar, J. *Saliency-guided Visual Attention Modeling by Autonomous Underwater Robots*. Proceedings of the Robotics: Science and Systems Conference XVIII (RSS 2022), New York, NY, June 2022. Acceptance rate:
- Fulton, M. S. (Lead Author), Mehtaz, M., Queeglay, O. and Sattar, J. *Underwater Robot-To-Human Communication Via Motion: Implementation and Full-Loop Human Interface Evaluation*. Proceedings of the Robotics: Science and Systems Conference XVIII (RSS 2022), New York, NY, June 2022. Acceptance rate:
- Mo, J. (Lead Author) & Sattar, J. *Continuous-Time Spline Visual-Inertial Odometry*. Proceedings of the IEEE International Conference on Robotics and Automation (ICRA), Philadelphia, PA, USA. May 2022. Accepted for publication. Acceptance rate:43.1%.
- Yuan*, J., Hong*, J., Sattar, J., & Isler, V. *ROW-SLAM: Under-Canopy Cornfield Semantic SLAM*. Proceedings of the IEEE International Conference on Robotics and Automation (ICRA), Philadelphia, PA, USA. May 2022. Accepted for publication. Acceptance rate:43.1%.
- Fulton*, M.S., Hong*, J., & Sattar, J. *Using Monocular Vision and Human Body Priors for AUVs to Autonomously Approach Divers*. Proceedings of the IEEE International Conference on Robotics and Automation (ICRA), Philadelphia, PA, USA. May 2022. Accepted for publication. Acceptance rate:43.1%.
- Mo, J. (Lead Author), Islam, M. J., & Sattar, J. *IMU-Assisted Learning of Single-View Rolling Shutter Correction*. Proceedings of the International Conference on Robot Learning (CoRL), London, UK, November 2021. Accepted for publication. Acceptance rate:38.25%.

- Agarwal, T. (Lead Author), Fulton, M. S., & Sattar, J. *Predicting the Future Motion of Divers for Enhanced Underwater Human-Robot Collaboration*. Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Prague, Czech Republic, September 2021. Accepted for publication. Acceptance rate:45%.
- de Langis*, K., Fulton*, M. S., & Sattar, J. *Towards Robust Visual Diver Detection Onboard Autonomous Underwater Robots: Assessing the Effect of Models and Data*. Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Prague, Czech Republic, September 2021. Accepted for publication. Acceptance rate:45%.
- Hong, J. (Lead Author), de Langis, K., Wyeth, C., Walaszek, C., & Sattar, J. *Semantically-Aware Strategies for Stereo-Visual Robotic Obstacle Avoidance*. Proceedings of the IEEE International Conference on Robotics and Automation (ICRA), Xi'an, China, May 2021. In press. Acceptance rate:48%.
- Edge, C. M., Enan, S. S., Fulton, M. S., Hong, J., Mo, J., Barthelemey, K., . . . Sattar, J. *Design and Experiments with LoCO AUV: A Low Cost Open-Source Autonomous Underwater Vehicle*. Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Las Vegas, NV, USA, October 2020. Pages 1761-1768, doi: 10.1109/IROS45743.2020.9341007. Acceptance rate:47%.
- Mo, J., & Sattar, J. *Place Recognition for Stereo Visual Odometry using LiDAR descriptors*. Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Las Vegas, NV, USA, October 2020. Pages 5893-5900, doi: 10.1109/IROS45743.2020.9341733. Acceptance rate:47%.
- Islam, M. J., Edge, C. M., Xiao, Y., Luo, P., Mehtaz, M., Morse, C., . . . Sattar, J. *Semantic Segmentation of Underwater Imagery: Dataset and Benchmark*. Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Las Vegas, NV, USA, October 2020. Pages 1769-1776, doi: 10.1109/IROS45743.2020.9340821. Acceptance Rate:47%.
- Islam, M. J., Luo, P., & Sattar, J. *Simultaneous Enhancement and Super-Resolution of Underwater Imagery for Improved Visual Perception*. Proceedings of the International Conference on Robotics: Science and Systems (RSS), Corvallis, OR, USA, July 2020. doi: 10.15607/RSS.2020.XVI.018. Acceptance rate: 32%.
- Hong, J., Fulton, M., & Sattar, J. *A Generative Approach Towards Improved Robotic Detection of Marine Litter*. Proceedings of the IEEE International Conference on Robotics and Automation (ICRA), Paris, France, June 2020. Pages 10525-10531, doi: 10.1109/ICRA40945.2020.9197575. Acceptance rate: 42%.
- de Langis, K. J. D., & Sattar, J. *Real-Time Multi-Diver Tracking and Re-identification for Underwater Human-Robot Collaboration*. Proceedings of the IEEE International Conference on Robotics and Automation (ICRA), Paris, France, June 2020. Pages 11140-11146, doi: 10.1109/ICRA40945.2020.9197308. Acceptance rate: 42%.
- Islam, M. J., Enan, S. S., Luo, P., & Sattar, J. *Underwater Image Super-Resolution using Deep Residual Multipliers*. Proceedings of the IEEE International Conference on Robotics and Automation (ICRA), Paris, France, June 2020. Pages 900-906, doi: 10.1109/ICRA40945.2020.9197213. Acceptance rate: 42%.
- Mo, J., & Sattar, J. *Extending Monocular Visual Odometry to Stereo System by Scale Optimization*. Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Macau SAR, China, November 2019. Pages 6921-6927, doi: 10.1109/IROS40897.2019.8968272. Acceptance rate: 45%.

- Fulton, M. S., Edge, C. M., & Sattar, J. *Robot Communication Via Motion: Closing the Human-Robot Interaction Loop Underwater*. Proceedings of the IEEE International Conference on Robotics and Automation (ICRA), Montreal, QC, Canada, May 2019. Pages 4660-4666, doi: 10.1109/ICRA.2019.8793491. Acceptance rate: 44%.
- Fulton, M. S., Hong, J., Islam, M. J., & Sattar, J. *Robotic Detection of Marine Litter Using Deep Visual Detection Models*. Proceedings of the IEEE International Conference on Robotics and Automation (ICRA), Montreal, QC, Canada, May 2019. Pages 5752-5758, doi: 10.1109/ICRA.2019.8793975. Acceptance rate: 44%.
- Xia, Y., & Sattar, J. *Visual Diver Recognition for Underwater Human-Robot Collaboration*. Proceedings of the IEEE International Conference on Robotics and Automation (ICRA), Montreal, QC, Canada, May 2019. Pages 6839-6845, doi: 10.1109/ICRA.2019.8794290. Acceptance rate: 44%.
- Islam, M. J., Ho, M., & Sattar, J. *Dynamic Reconfiguration of Mission Parameters in Underwater Human-Robot Collaboration*. Proceedings of the IEEE International Conference on Robotics and Automation (ICRA), Brisbane, QL, Australia, May 2018. Pages 6212-6219, doi: 10.1109/ICRA.2018.8461197. Acceptance rate: 40.6%.
- Fabbri, C., Islam, M. J., & Sattar, J. *Enhancing Underwater Imagery using Generative Adversarial Networks*. Proceedings of the IEEE International Conference on Robotics and Automation (ICRA), Brisbane, QL, Australia, May 2018. Pages 7159-7165, doi: 10.1109/ICRA.2018.8460552. Acceptance rate: 40.6%.
- Shkurti, F., Chang, W.-D., Henderson, P., Islam, M. J., Higuera, J. C. G., Li, J., . . . Sattar, J. *Underwater Multi-Robot Convoying using Visual Tracking by Detection*. Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Vancouver, BC, Canada, September 2017. Pages 4189-4196, doi: 10.1109/IROS.2017.8206280. Acceptance rate: 41%.
- Islam, M. J., & Sattar, J. *Mixed-domain Biological Motion Tracking for Underwater Human-Robot Interaction*. Proceedings of the IEEE International Conference on Robotics and Automation (ICRA), Singapore, Singapore, June 2017. Pages 4457-4464, doi: 10.1109/ICRA.2017.7989516. Acceptance rate: 41%.
- Fabbri, C., & Sattar, J. *smartTalk: A Learning Based Framework for Natural Human-Robot Interaction*. Proceedings of the Thirteenth International Conference on Computer and Robot Vision (CRV), Victoria, BC, Canada, June 2016. Pages 376-382, doi: 10.1109/CRV.2016.67. Acceptance rate: unknown.
- TalebiFard, P., Sattar, J., & Mitchell, I. *A Risk Assessment Infrastructure for Powered Wheelchair Motion Commands without Full Sensor Coverage*. Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Chicago, IL, USA, September 2014. Pages 3592-3597, doi: 10.1109/IROS.2014.6943065. Acceptance rate: 46%.
- Sattar, J., & Little, J. J. *Ensuring Safety in Human-Robot Dialog - a Cost-Directed Approach*. Proceedings of the IEEE International Conference on Robotics and Automation (ICRA), Hong Kong SAR, China, May 2014. Pages 6660-6666, doi: 10.1109/ICRA.2014.6907842. Acceptance rate: 48%.
- Sattar, J., & Dudek, G. *Towards Quantitative Modeling of Task Confirmations in Human-Robot Dialog*. Proceedings of the IEEE International Conference on Robotics and Automation (ICRA), Shanghai, China, May 2011. Pages 1957-1963, doi: 10.1109/ICRA.2011.5979633. Acceptance rate: 48%.
- Sattar, J., & Dudek, G. *Reducing Uncertainty in Human-Robot Interaction - a Cost Analysis*

- Approach*. Proceedings of the Twelfth International Symposium on Experimental Robotics (ISER), New Delhi and Agra, India, December 2010. Pages 81-95, doi: 10.1007/978-3-642-28572-1_6. Acceptance rate: unknown.
- Sattar, J., Xu, A., Charette, G., & Dudek, G.** *Graphical State-Space Programmability as a Natural Interface for Robotic Control*. Proceedings of the IEEE International Conference on Robotics and Automation (ICRA), Anchorage, Alaska, USA, May 2010. Pages 4609-4614, doi: 10.1109/ROBOT.2010.5509269.
- Rekleitis, I., Dudek, G., Schoueri, Y., Giguère, P., & **Sattar, J.** *Telepresence Across the Ocean*. Proceedings of the Seventh Canadian Conference on Robot Vision (CRV), Ottawa, Ontario, Canada, May 2010. Pages 261-268, doi: 10.1109/CRV.2010.41. Acceptance rate: unknown.
- Sattar, J., & Dudek, G.** *Underwater Human-Robot Interaction via Biological Motion Identification*. Proceedings of the International Conference on Robotics: Science and Systems (RSS), Seattle, WA, USA. Pages 185-192. Acceptance rate: 25%.
- Sattar, J., & Dudek, G.** *A Vision-based Control and Interaction Framework for a Legged Underwater Robot*. Proceedings of the Sixth Canadian Conference on Robot Vision (CRV), Kelowna, British Columbia, Canada. Pages 329-336. Acceptance rate: unknown.
- Sattar, J., & Dudek, G.** *Robust Servo-control for Underwater Robots using Banks of Visual Filters*. Proceedings of the IEEE International Conference on Robotics and Automation, (ICRA), Kobe, Japan, May 2009. Pages 3583-3588, doi: 10.1109/ROBOT.2009.5152197. Acceptance rate: 42.8%.
- Sattar, J., Dudek, G., Chiu, O., Rekleitis, I., Mills, A., Giguère, P., . . . Lobos, J.-P.** *Enabling Autonomous Capabilities in Underwater Robotics*. Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Nice, France, September 2008. Pages 3628-3634, doi: 10.1109/IROS.2008.4651158. Acceptance rate: 48.8%.
- Sattar, J., & Dudek, G.** *A Boosting Approach to Visual Servo-Control of an Underwater Robot*. Proceedings of the Eleventh International Symposium on Experimental Robotics (ISER), Athen, Greece, July 2008. Pages 417-428. Acceptance rate: unknown.
- Xu, A., Dudek, G., & **Sattar, J.** *A Natural Gesture Interface for Operating Robotic Systems*. Proceedings of the IEEE International Conference on Robotics and Automation (ICRA), Pasadena, CA, USA, May 2008. Pages 3557-3563, doi: 10.1109/ROBOT.2008.4543755. Acceptance rate: 44.7%.
- Sattar, J., & Dudek, G.** *Where Is Your Dive Buddy: Tracking Humans Underwater Using Spatio-temporal Features*. Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), San Diego, CA, USA. Pages 3654-3659, doi: 10.1109/IROS.2007.4399527. Acceptance rate: 49.7%.
- Sattar, J., Bourque, E., Giguère, P., & Dudek, G.** *Fourier Tags: Smoothly Degradable Fiducial Markers For Use In Human-robot Interaction*. Proceedings of the Fourth Canadian Conference on Computer and Robot Vision (CRV), Montréal, QC, Canada. Pages 165-174. doi: <http://dx.doi.org/10.1109/CRV.2007.34>. Acceptance rate: unknown.
- Dudek, G., **Sattar, J., & Xu, A.** *A Visual Language for Robot Control and Programming: A Human-Interface Study*. Proceedings of the International Conference on Robotics and Automation (ICRA), Rome, Italy, April 2007. Pages 2507-2513, doi: 10.1109/ROBOT.2007.363842. Acceptance rate: 44%.
- Dudek, G., Giguère, P., & **Sattar, J.** *Sensor-Based Behavior Control for an Autonomous Underwater Vehicle*. Proceedings of the Tenth International Symposium of Experimental

Robotics (ISER), Rio de Janeiro, Brasil, July 2006. Pages 267-276. Acceptance rate: unknown.

Sattar, J., & Dudek, G. *On the Performance of Color Tracking Algorithms for Underwater Robots under Varying Lighting and Visibility*. Proceedings of the IEEE International Conference on Robotics and Automation (ICRA), Orlando, FL, USA, May 2006. Pages 3550-3555, doi: 10.1109/ROBOT.2006.1642244. Acceptance rate: 39%.

Sattar, J., Giguère, P., Dudek, G., & Prahacs, C. *A Visual Servoing System for an Aquatic Swimming Robot*. Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Edmonton, AB, Canada, August 2005. Pages 1483-1488, doi: 10.1109/IROS.2005.1545282. Acceptance rate: 54%.

Dudek, G., Jenkin, M., Prahacs, C., Hogue, A., **Sattar, J.**, Giguère, P., . . . Rekleitis, I. *A Visually Guided Swimming Robot*. Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Edmonton, AB, Canada, August 2005. Pages 3604-3609, doi: 10.1109/IROS.2005.1545231. Acceptance rate: 54%.

Open-Source Underwater Robot

Sattar, J. (Lead Author) (2021). *LoCO: A Low-Cost, Open-Source Autonomous Underwater Vehicle*. <https://loco-auv.github.io/>

Technical Report

Fabrizi, C. (Lead Author), & **Sattar, J.** (2018). *On Applications of GANs and Their Latent Representations*. Minneapolis, MN: Department of Computer Science, University of Minnesota Twin Cities.

Xu, A., Dudek, G., & **Sattar, J.** (2007). *A Natural Gesture Interface for Operating Robotic Systems* TR-CIM-07-02 ed.. Montreal, Canada: McGill University.

Publications Submitted

Asterisk() - indicates Co-First Author*

Underline - indicates student author

Peer-Reviewed Journal Article

Edge, C. M.*, Fulton, M.S.*, Hong, J.*, Barthelemy, K., Knutson, C., Orpen, K., & **Sattar, J.** Towards Power-On-and-Go Capabilities for a Low-Cost Open-Source Autonomous Underwater Robot Companion. *Autonomous Robots*. [Under Review:2021]

Hong, J (Lead Author), Fulton, M., & Sattar, J. Towards Robotic Detection of Marine Litter. *IEEE Robotics and Automation Magazine*. [Revise and Resubmit: 2022]

Conference Proceeding

Fulton, M. S.*, Prabhu, A., & **Sattar, J.** *HREyes: Design, Development, and Evaluation of A Novel Method for AUVs to Communicate Information and Gaze Direction*. IEEE/RSJ International Conference on Robotics and Automation (ICRA 2022), London, United Kingdom, May/June 2023.

Enan, S. S.* & **Sattar, J.** *Visual Detection of Diver Attentiveness for Underwater Human-Robot Interaction*. IEEE/RSJ International Conference on Robotics and Automation (ICRA 2022), London, United Kingdom, May/June 2023.

Edge, C. M.* & **Sattar, J.** *Diver Interest via Pointing: Human-Directed Object Inspection for AUVs*. IEEE/RSJ International Conference on Robotics and Automation (ICRA 2022), London, United Kingdom, May/June 2023.

Patents and Intellectual Property

Vehicle Lane Detection System, patent #10872246. Issued: December 22, 2020

Amphibious robotic device, patent #7427220. Issued: September 23, 2008

Invited Presentations, Posters, and Exhibits

Underline - indicates student presenter

Keynote/Plenary Address

Sattar, J. "Computational Approaches to Underwater Human-Robot Collaboration," Turkey Robotics Conference IEEE, Istanbul, Other, Turkey. (June 26, 2019). *Invited. Peer-reviewed/refereed.*

Demonstration

Sattar, J. "Underwater robots for environmental monitoring," Digi Labs, Wayzata, Minnesota, United States. (April 13, 2017). *Invited. Peer-reviewed/refereed.*

Introduction to the Marine Robotics Sea Trials 2020

Sattar, J. "Introduction to the Marine Robotics Sea Trials 2020," Marine Robotics Sea Trials 2020 Bellairs Research Institute, Holetown, Other, Barbados. (January 10, 2020). *Invited. Peer-reviewed/refereed.*

Lecture

Sattar, J. "Perception, Learning, and Systems for Underwater Human-Robot Collaboration," Minnesota Robotics Institute Seminar Minnesota Robotics Institute, Minneapolis, Minnesota, United States. (October 9, 2020). *Invited. Peer-reviewed/refereed.*

Presentation/Talk

Sattar, J. "Applied Deep Machine Learning for Underwater Human-Robot Collaboration," MIST Workshop on Learning Machine Learning: The ML Pipeline Bangladesh Military Institute of Science and Technology, Dhaka, Bangladesh. (August 16, 2020). *Invited. Peer-reviewed/refereed.*

Sattar, J. "Perception, Learning, and Systems for Underwater Human-Robot Collaboration," University of Iowa Computing Conference University of Iowa, Iowa City, Iowa, United States. (March 1, 2020). *Invited. Peer-reviewed/refereed.*

Sattar, J. "Perception, Learning, and Systems for Underwater Human-Robot Collaboration," Aerospace Engineering and Mechanics Seminar Department of Aerospace Engineering and Mechanics, Minneapolis, Minnesota, United States. (February 28, 2020). *Invited. Peer-reviewed/refereed.*

Sattar, J. "(Not) Rolling in the Deep!," University of Minnesota Robotics: Fall Tech Talks University of Minnesota Robotics, Minneapolis, Minnesota, United States. (October 23, 2019). *Invited. Peer-reviewed/refereed.*

Sattar, J. "Living with Truly Intelligent Machines Perception, Cognition, Learning and Locomotion for Human-Robot Collaboration," TEDxYouth@MinnetonkaHS, Minnetonka, Minnesota, United States. (November 17, 2018). *Invited.*

Sattar, J. "Computational Approaches to Underwater Human-Robot Collaboration," Monash University, Melbourne, Other, Australia. (June 8, 2018). *Invited. Peer-reviewed/refereed.*

Sattar, J. "Computational Approaches to Underwater Human-Robot Collaboration,"

Commonwealth Scientific and Industrial Research Organisation, Hobart, Other, Australia. (May 28, 2018). *Invited. Peer-reviewed/refereed.*

Sattar, J. "Robots in the water: IoT when the 'I' is hard to reach," IoT Fuse Conference, Minneapolis, Minnesota, United States. (May 4, 2018). *Invited.*

Sattar, J. "Embodiment of Artificial Intelligence - robots, autonomy, interaction and learning," Student Senate Expert Witness in AI, Roseville, Minnesota, United States. (March 28, 2017). *Invited. Peer-reviewed/refereed.*

Sattar, J. "On land and in the water – vision for intelligent systems," Computer Science and Engineering Colloquium, Minneapolis, Minnesota, United States. (January 30, 2017). *Invited. Peer-reviewed/refereed.*

Sattar, J. "Vision-guided intelligence for underwater robotics and assisted driving," Underwater Robot Sea Trials Bellairs Research Institute, McGill University, Folkestone, Other, Barbados. (January 10, 2017). *Invited. Peer-reviewed/refereed.*

Sattar, J. "Underwater human-robot collaboration for monitoring and surveillance," Large Lakes Observatory, University of Minnesota Duluth, Duluth, Minnesota, United States. (March 31, 2016). *Invited. Peer-reviewed/refereed.*

URL: http://prezi.com/piruv4pj8i8e/?utm_campaign=share&utm_medium=copy

Presentations, Posters, and Exhibits

Underline - indicates student presenter

Demonstration

Sattar, J. "Robots in the Wild," Discover STEM College of Science and Engineering. (August 8, 2018).

Sattar, J. "Robots in the Wild," Eureka! with Girls Inc. College of Science and Engineering and YMCA Minneapolis. (July 9, 2018).

Sattar, J. "Robots in the Wild," Eureka! with Girls Inc. College of Science and Engineering and YMCA Minneapolis. (July 5, 2018).

Creative and Artistic Practice, Performances, and Exhibits

Robotics Exhibit

Sattar, J., Fulton, M. S., Hong, J., Edge, C. M., Mo, J.,
Barthelemy, K., Orpen, K., "Robot Exhibit at the CS&E 50th
Year Celebration," Interactive Robotics and Vision Laboratory,
McNamara Alumni Center, Minneapolis, Minnesota, United
States

November 24, 2019

Media Contributions

Minnesota Robotics Institute
<https://youtu.be/UpZ73WIa6HQ>

December 2020

November 2019

50 Years of Progress: Computer Science & Engineering
at the University of Minnesota.

<https://youtu.be/Y8urKu1jGp8>

- "Inventing Tomorrow," College of Science and Engineering
issuu.com/inventingtomorrow/docs/cse_inventing_tomorrow_fall_2018?e=0 November 2018
Magazine cover story
- "Research Spotlight: UMN underwater robots," College of
Science and Engineering youtu.be/2qSBCUI_6hQ November 2018
- "20,000 Leagues Under the Cloud," IEEE Spectrum Magazine February 8, 2016
spectrum.ieee.org/tech-talk/telecom/internet/20000-leagues-under-the-cloud
- "AQUA le robot sous-marin," Canal Savoir June 23, 2011
- "Swimming Robots? Six-legged Style", " National Science and
Engineering Research Council June 30, 2010
www.nserc-crsng.gc.ca/Media-Media/ImpactStory-ArticlesPercutant_eng.asp?ID=1038
- "McGill's robot star attraction at G20 media centre," McGill
Reporter June 24, 2010
publications.mcgill.ca/reporter/2010/06/mcgills-robot-star-attraction-at-g20-media-centre/
- "Swimming robot will follow your fins," New Scientist Online February 15, 2008
www.newscientist.com/blog/technology/2008/02/swimming-robot-will-follow-your-fins.html
- "Daily Planet," Discovery Channel Canada February 7, 2008
January 2008 Aqua robot field trip to Barbados, as team manager.
- "Gone Swimmin'," IEEE Spectrum June 2, 2006
spectrum.ieee.org/computing/hardware/gone-swimmin
Photo credits.
- "Canadian researchers develop aqua robot," Canadian Television
(CTV) Network January 26, 2004

PROFESSIONAL DEVELOPMENT ACTIVITIES

- University Teaching/Learning Program, "New Faculty
Development Workshop," University of Minnesota,
Minneapolis, Minnesota, United States September 1, 2016 - Present

ADVISING AND MENTORING

Undergraduate Students Activities

Other Advising Activities

- University of Minnesota**
UROP Advisor.

January 2020 - Present

Kevin Orpen UROP Advisor.	January 2020 - Present
Kimberley Barthelemy UROP Advisor.	January 2020 - Present
Mazzin Khidir Undergraduate Honors Thesis.	January 2019 - May 2019
Marc Ho	
Other	
UROP Advisor. Berik Kallevig	December 2018 - May 2019

Graduate Student Activities

Advisees

Sakshi Singh, Computer Science Ph D	2022 - Present
Corey Knutson, Computer Science Ph D	2021 - Present
Sadman Sakib Enan, Computer Science M S	2021 - Present
Sadman Sakib Enan, Computer Science Ph D	2019 - Present
Chelsey Edge, Computer Science Ph D	2018 - Present
Michael Fulton, Computer Science Ph D	2017 - Present
Jungseok Hong, Computer Science Ph D	2017 - Present
Jordan Zumberge, Robotics MS	2021 - Present
Cory Ohnsted, Robotics MS	2022 - Present
Jiawei Mo, Computer Science Ph D	2017 - 2022
Thesis: Towards a Fast, Robust and Accurate Visual-Inertial Simultaneous Localization and Mapping System	
Md Jahidul Islam, Computer Science Ph D	2016 - 2021
Thesis: Machine Vision for Improved Human-Robot Cooperation in Adverse Underwater Conditions	
Andrea Walker, Computer Science M S	2020 - 2021
Thesis: Towards Natural Underwater Human-Robot Interaction: Pointing Gesture Recognition for Autonomous Underwater Vehicles	
Pallavi Mitra, Computer Science M S	2019 - 2020
Thesis: Monocular Depth Estimation using Adversarial Training	
Santhosh Alladi, Computer Science M S	2019 - 2020
Thesis: Augmenting Electrocardiogram Datasets using Generative Adversarial Networks	
Jiawei Mo, Computer Science M S	2016 - 2019
Janna Madden, Computer Science M S	2019
Thesis: Algorithmically Recognizing Gait Variance from a Sensor-Based System	
Karin De Langis, Computer Science M S	2019
Yi-Chun Lu, Data Science M S	2018 - 2019
Cameron Fabbri, Computer Science M S	2017-2018
Thesis: Enhancing Visual Perception in Noisy Environments using Generative Adversarial Networks	
Liyao Lu, Data Science M S	2018
Justin Diercks, Computer Science Ph D	2016 - 2017

Committee Advising

Doctoral Final Committee: Committee Member

Md Jahidul Islam, Computer Science Ph D	2021
Thesis: Machine Vision for Improved Human-Robot Cooperation in Adverse Underwater Conditions	
Nikolaos Stefanos, Computer Science Ph D	2020
Thesis: Environmental Monitoring with Unmanned Aerial Vehicles	
Patrick Plonski, Computer Science Ph D	2019
Thesis: Energy-aware Robotics for Environmental Monitoring	

Doctoral Final Committee: Committee Reviewer

Robert Giaquinto, Computer Science Ph D	2021 - Present
Patrick Plonski, Computer Science Ph D	2019
Thesis: Energy-aware Robotics for Environmental Monitoring	
Trevor Stephens, Mechanical Engr Ph D	2019
Thesis: Augmenting Surgical Robot Interactions with Intelligent Autonomy	
Mustafijur Rahman, Electrical Engineering Ph D	2016
Thesis: Design of Low Power Integrated Radios	
Joel Hesch, Computer Science Ph D	2016
Thesis: Consistency Analysis and Improvement for Vision-aided Inertial Navigation	

Doctoral Preliminary Committee: Committee Chair

Md Jahidul Islam, Computer Science Ph D	2018 - 2021
Thesis: Machine Vision for Improved Human-Robot Cooperation in Adverse Underwater Conditions	
Jiawei Mo, Computer Science Ph D	2018 - Present

Doctoral Preliminary Committee: Committee Member

Sadman Sakib Enan, Computer Science Ph D	2021 - Present
Karin De Langis, Computer Science Ph D	2020 - Present
Dario Canelon-Suarez, Mechanical Engr Ph D	2020 - Present
Nikolaos Stefanos, Computer Science Ph D	2017 - 2020
Thesis: Environmental Monitoring with Unmanned Aerial Vehicles	
Wenbo Dong, Computer Science Ph D	2017 - 2020
Thesis: 3D Computer Vision Algorithms for Semantic Reconstruction of Agricultural Environments	
Michael Fulton, Computer Science Ph D	2019 - Present
Trevor Stephens, Mechanical Engr Ph D	2016 - 2019
Thesis: Augmenting Surgical Robot Interactions with Intelligent Autonomy	
Jungseok Hong, Computer Science Ph D	2019 - Present
Robert Martin, Computer Science Ph D	2018 - Present

Master's Thesis/Research Committee: Committee Chair

Andrea Walker, Computer Science M S	2021
Thesis: Towards Natural Underwater Human-Robot Interaction: Pointing Gesture Recognition for Autonomous Underwater Vehicles	

Sadman Sakib Enan, Computer Science M S	2021 - Present
Pallavi Mitra, Computer Science M S	2020
Jack Perisich, Computer Science M S	2020
Santhosh Alladi, Computer Science M S	2020
Thesis: Augmenting Electrocardiogram Datasets using Generative Adversarial Networks	
Yi-Chun Lu, Data Science M S	2019
Cameron Fabbri, Computer Science M S	2018
Thesis: Enhancing Visual Perception in Noisy Environments using Generative Adversarial Networks	
Liyao Lu, Data Science M S	2018

Master's Thesis/Research Committee: Committee Member

Atharva Mahabaleshwarkar, Mechanical Engr M S M E	2021
Emily Goldberg, Mechanical Engr M S M E	2021
Dario Canelon-Suarez, Mechanical Engr M S M E	2020
Jungseok Hong, Computer Science M S	2019 - 2020
Janna Madden, Computer Science M S	2019
Thesis: Algorithmically Recognizing Gait Variance from a Sensor-Based System	

Master's Thesis/Research Committee: Committee Reviewer

Trevor Stephens, Mechanical Engr M S M E	2016
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Other Students Activities

High school

Honors Mentoring Connection, Wayzata Schools. Harshil Ganesha Murthy	October 16, 2018 - June 6, 2019
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High school sophomore

Minnnetonka Research Program mentoring, Minnetonka Schools. Jai Chadha	September 30, 2017 - May 30, 2018
Mentoring research by Jai Chadha in creating an underwater diver assistance device as part of the research course offered under the Minnetonka Research program for high school students.	

SERVICE

Service to the Discipline/Profession/Interdisciplinary Area(s)

Associate Editor

International Conference on Robotics and Automation, Appointed	September 2018 - May 2019
International Conference on Intelligent Robots and Systems, Neither, Vancouver, B.C., Canada, approximately 50 hours spent per year	February 15, 2017 - October 1, 2017

Assisted in the conference reviewing process by assigning papers to reviewers, collecting and summarizing reviews, and recommending publications decisions to conference editors.

International Conference on Robotics and Automation (ICRA 2017), Appointed, Singapore, N/A, Singapore, approximately 50 hours spent per year	September 16, 2016 - January 15, 2017
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Assisted in the conference reviewing process by assigning papers to reviewers, collecting and summarizing reviews, and recommending publications decisions to conference editors.

Member

International Conference on Computer and Robot Vision, 2016 - 2017
Appointed, Edmonton, Alberta, Canada, approximately 10
hours spent per year

Registration Chair

International Conference on Robotics and Automation, January 1, 2019 - June 1, 2019
Appointed, Montreal, Quebec, Canada, approximately 20
hours spent per year
Served as Registration Chair for ICRA 2019.

Reviewer

Autonomous Robots, Neither, Switzerland, approximately 5 December 2019 - Present
hours spent per year

IEEE International Conference on Robotics and Automation, October 2019 - November 2019
Neither, Paris, France, approximately 20 hours spent per year

Session Chair

IEEE/RSJ International Conference on Intelligent Robots and November 4, 2019 - November 8,
Systems, Appointed, Macau, Macau SAR, China, 2019
approximately 1.5 hours spent per year

IEEE International Conference on Robotics and Automation 2017, Appointed, Singapore, Singapore, approximately 3 2017
hours spent per year

International Conference on Intelligent Robots and Systems, 2017
Appointed, Vancouver, British Columbia, Canada,
approximately 3 hours spent per year

Service to the University/College/Department

University of Minnesota

College

Member, MnDrive Workshop and Seminars Committee September 6, 2016 - Present

Member, MnDRIVE Vision Committee October 2018 - August 2019

Member, MnDrive Industry and Outreach Committee January - September 2016

Department

Member, Graduate Admissions Committee September 2019 - August 2022

Member, Graduate Affairs Committee September 2020 - August 2021

Member, Curriculum Committee September 2019 - Present

Member, Faculty Hiring Committee September 2018 - August 2019

Member, Strategic Planning Committee September 2021 - Present

Member, Strategic Planning Committee September 2018 - August 2019

Member, Graduate Admissions Committee January 1, 2016 - August 2018