

Jungseok Hong

POSTDOCTORAL ASSOCIATE

MIT Computer Science & Artificial Intelligence Laboratory
32-226 Vassar St, Cambridge MA 02139

✉ jungseok@mit.edu | 🌐 www.jungseokhong.com

Education

University of Minnesota

Minneapolis, MN, USA

PH.D. COMPUTER SCIENCE AND ENGINEERING

Sep 2017 - July 2023

- Advisor: Junaed Sattar
- Committee: Junaed Sattar, Nikolaos Papanikolopoulos, Catherine Zhao, Maziar Hemati
- Thesis: Toward Robotic Autonomy in Data-Scarce and Visually Challenging Environments

University of Central Florida

Orlando, FL, USA

M.SC. ELECTRICAL ENGINEERING

Sep 2015 - August 2017

- Advisor: Wei Sun
- Committee: Wei Sun, Qipeng Zheng, Qun Zhou
- Thesis: A Multiagent Q-learning-based Restoration Algorithm for Resilient Distribution System Operation

South Dakota State University

Brookings, SD, USA

B.SC. ELECTRICAL ENGINEERING (*Summa Cum Laude*), MINOR IN MATHEMATICS

Jan 2013 - May 2015

- Advisor: Wei Sun
- Senior Design: Design of Relay-based Protection Scheme for Wind Farm Generator Installations
- Obtained Fundamentals of Engineering Certificate (Engineer In Training)

Sung Kyun Kwan University (SKKU)

Seoul, Korea

B.SC. ELECTRICAL ENGINEERING

Mar 2007 - Aug 2015

- Awarded Samsung Full Scholarship based on an excellent Korean SAT score and fully funded
- Obtained Dual Degree with South Dakota State University

Professional Experience

2023-	Postdoctoral Associate , Massachusetts Institute of Technology, Advisor: John Leonard
2019-2023	Graduate Research Assistant , University of Minnesota, Advisor: Junaed Sattar
2022-2022	Research Intern (7-month) , Samsung AI Center New York (New York, NY), Advisor: Volkan Isler
2020-2020	Research Intern (Summer) , Sentra (Minneapolis, MN), Advisor: Dimitris Zermas
2017-2019	Graduate Teaching Assistant , University of Minnesota
2017-2017	Graduate Teaching Assistant , University of Central Florida
2015-2017	Graduate Research Assistant , University of Central Florida, Advisor: Wei Sun
2013-2015	Undergraduate Research Assistant , South Dakota State University, Advisors: Wei Sun, Dennis Helder, Wei Wang

Publications

PEER-REVIEWED CONFERENCE PUBLICATIONS

- [C8] **Jungseok Hong**, Suveer Garg, Volkan Isler, "Semantic Mapping with Confidence Scores through Metric Embeddings and Gaussian Process Classification" Accepted for publication in the IEEE International Conference on Robotics and Automation (ICRA) 2023.
- [C7] Jinwook Huh, **Jungseok Hong**, Suveer Garg, Hyun Soo Park, Volkan Isler, "Self-supervised Wide Baseline Visual Servoing via 3D Equivariance" Proceedings of the International Conference on Intelligent Robots and Systems (IROS) 2022. In Press. Kyoto, Japan.
- [C6] Michael Fulton*, **Jungseok Hong***, Junaed Sattar, "Using Monocular Vision and Human Body Priors for AUVs to Autonomously Approach Divers" Proceedings of the IEEE International Conference on Robotics and Automation (ICRA) 2022. In Press. Philadelphia, PA, USA. *The authors contributed equally to this work.

- [C5] Jiacheng Yuan, **Jungseok Hong**, Junaed Sattar, Volkan Isler, “ROW-SLAM: Under-Canopy Cornfield Semantic SLAM” Proceedings of the IEEE International Conference on Robotics and Automation (ICRA) 2022. In Press. Philadelphia, PA, USA.
- [C4] **Jungseok Hong**, Karin de Langis, Cole Wyeth, Chris Walaszek, Junaed Sattar, “Semantically-Aware Strategies for Stereo-Visual Robotic Obstacle Avoidance” Proceedings of the IEEE International Conference on Robotics and Automation (ICRA) 2021. In Press. Xi’an, China (Virtual).
- [C3] Chelsey Edge, Sadman Sakib Enan, Michael Fulton, **Jungseok Hong***, Jiawei Mo, Kimberly Barthelemy, Hunter Bashaw, Berik Kallevig, Corey Knutson, Kevin Orpen, Junaed Sattar, “Design and Experiments with LoCO AUV: A Low Cost Open-Source Autonomous Underwater Vehicle” Proceedings of the International Conference on Intelligent Robots and Systems (IROS) 2020. In Press. Las Vegas, NV, USA (Virtual). *The authors in alphabetical order.
- [C2] **Jungseok Hong**, Michael Fulton, Junaed Sattar, “A Generative Approach Towards Improved Robotic Detection of Marine Litter” Proceedings of the IEEE International Conference on Robotics and Automation (ICRA) 2020. In Press. Paris, France.
- [C1] Michael Fulton*, **Jungseok Hong***, Junaed Sattar, “Robotic Detection of Marine Litter Using Deep Visual Detection Models” Proceedings of the IEEE International Conference on Robotics and Automation (ICRA) 2019. In Press. Montreal, QC, Canada. *The authors contributed equally to this work.

JOURNAL ARTICLES

- [J3] **Jungseok Hong**, Michael Fulton, Kevin Orpen, Kimberly Barthelemy, Keara Berlin, Junaed Sattar, “A Quantitative Evaluation of Bathymetry-based Bayesian Localization Methods for Autonomous Underwater Robots” Under Review
- [J2] Md Jahidul Islam, **Jungseok Hong**, Junaed Sattar, “Person Following by Autonomous Robots: A Categorical Overview” The International Journal of Robotics Research (IJRR). 2019, 38(14), 1581–1618.
- [J1] Brian Wenny, Dennis Helder, **Jungseok Hong**, Larry Leigh, Kurtis Thome, Dennis Reuter, “Pre- and Post-Launch Spatial Quality of the Landsat 8 Thermal Infrared Sensor” Remote Sensing. 2015, 7(2), 1962-1980.

PEER-REVIEWED WORKSHOP PAPERS

- [W1] Chelsey Edge, Sadman Sakib Enan, Michael Fulton, **Jungseok Hong***, Junaed Sattar, “Power-On-and-Go Capabilities for a Low-Cost Modular Autonomous Underwater Vehicle” Robotics: Science and Systems (RSS) 2020 Workshop on Power On and Go Robots. Virtual RSS. *The authors in alphabetical order.

RELEASED DATASETS

- [D2] **Jungseok Hong**, Michael Fulton, Junaed Sattar, “TrashCan 1.0 An Instance-Segmentation Labeled Dataset of Trash Observations”, Data Repository for the University of Minnesota (DRUM), July 2020. (Downloaded 35,813 times as of May 18th 2023) [url: <https://conservancy.umn.edu/handle/11299/214865>]
- [D1] Michael Fulton, **Jungseok Hong**, Junaed Sattar, “Trash-ICRA19: A Bounding Box Labeled Dataset of Underwater Trash”, Data Repository for the University of Minnesota (DRUM), July 2020. (Downloaded 9,148 times as of May 18th 2023) [url: <https://conservancy.umn.edu/handle/11299/214366>]

PREPRINTS

- [P1] **Jungseok Hong**, Michael Fulton, Junaed Sattar, “Trashcan: A semantically-segmented dataset towards visual detection of marine debris”, Arxiv 2020.

Awards, Fellowships, & Grants

2023	ICRA 2023 RAS Travel Grant, IEEE Robotics and Automation Society	\$ 1,300
2021	KOCSEA 2nd Place Award for Research Presentation, KOCSEA (Korean Computer Scientists and Engineers Association in America)	\$ 500
2019	UMII MnDRIVE Graduate Fellowship, University of Minnesota MnDrive	\$ 50,000

2015	Power System Protection Scholarship , Schweitzer Engineering Lab. (SEL)	\$ 4,000
	Engineering Expo 2nd Place Award , South Dakota State University	\$ 500
	Dean's List , South Dakota State University	
2014	BENNETT Fellowship , South Dakota State University	\$ 3,000
	Dean's List , South Dakota State University	
2013	Dean's List , South Dakota State University	
2012	Dean's List , Sung Kyun Kwan University (SKKU)	
2007	Samsung Full (4-year) Scholarship , Sung Kyun Kwan University (SKKU)	\$ 40,000

Presentations

INVITED TALKS

- March 2023. *Toward robotic autonomy in data-scarce and visually challenging environments*. Invited talk: MIT Computer Science & Artificial Intelligence Laboratory, Host: John Leonard Cambridge, MA.
- February 2023. *Toward robotic perception in data-scarce and visually challenging environments*. Invited talk: 20th Annual Marine Robotics Workshop & Field Trials, Host: Greg Dudek Holetown, Barbados.
- November 2022. *Toward robotic perception and its applications in a data-scarce and visually challenging environment*. Invited talk: GRaDS at the University of Minnesota, Minneapolis, MN.
- January 2022. *Robust Object Detection, Localization, and Exploration for Autonomous Robots in Unstructured Environments*. Invited talk: Samsung AI Center New York, Host: Volkan Isler, New York, NY (Online).
- November 2021. *Semantically-Aware Strategies for Stereo-Visual Robotic Obstacle Avoidance*. Invited talk: the 21st KOCSEA Technical Symposium, Las Vegas, NV.
- April 2021. *Semantically-Aware Strategies for Stereo-Visual Robotic Obstacle Avoidance*. Invited talk: GRaDS at the University of Minnesota, Minneapolis, MN (Online).
- April 2019. *Towards the Detection and Localization of Underwater Trash by Autonomous Robotic Platforms*. Invited talk: VCAI Seminar at the University of Minnesota, Minneapolis, MN.

RESEARCH PRESENTATIONS

- "Using Monocular Vision and Human Body Priors for AUVs to Autonomously Approach Divers" Poster Presentation: ICRA 2022, Philadelphia, PA.
- "ROW-SLAM: Under-Canopy Cornfield Semantic SLAM" Poster Presentation: ICRA 2022, Philadelphia, PA.
- "Semantically-Aware Strategies for Stereo-Visual Robotic Obstacle Avoidance" Poster Presentation: ICRA 2021, Xi'an, China (Virtual).
- "Design and Experiments with LoCO AUV: A Low Cost Open-Source Autonomous Underwater Vehicle" Poster Presentation: IROS 2020, Las Vegas, NV (Virtual).
- "A Generative Approach Towards Improved Robotic Detection of Marine Litter" Poster Presentation: ICRA 2020, Paris, France (Virtual).
- "Robotic Detection of Marine Litter Using Deep Visual Detection Models" Poster Presentation: ICRA 2019, Montreal, QC, Canada.

Teaching Experience

Spring 2019	Introduction to Machine Learning, CSCI5521 , Teaching Assistant to Prof. Rui Kuang	<i>Univ. of Minnesota</i>
Fall 2018	Robotics I, CSCI5551 , Teaching Assistant to Prof. Junaed Sattar	<i>Univ. of Minnesota</i>
Spring 2018	Linear Algebra, CSCI2033 , Teaching Assistant to Prof. Yousef Saad	<i>Univ. of Minnesota</i>
Fall 2017	Computer Architecture, CSCI2021 , Teaching Assistant to Lec. Chris Dovolis	<i>Univ. of Minnesota</i>
Spring 2017	Electrical Network, EEL3004 , Teaching Assistant to Lec. Azza Fahim, Aman Behal	<i>Univ. of Central Florida</i>

Mentoring

** undergraduates who co-authored the listed publications*

2021-2021	Ben Withey , CS Undergrad, University of Minnesota	
2019-2021	Kevin Orpen* , ME Undergrad, University of Minnesota	<i>Associate Design Engineer at Collins Aerospace</i>
2019-2020	Chris Morse* , CS Undergrad, University of Minnesota	<i>PhD Student at the University of Virginia</i>
2019-2020	Cole Wyeth* , CS Undergrad, University of Minnesota	
2018-2019	Julian Lagman , CS Undergrad, University of Minnesota	<i>Software Engineer at Medtronic</i>

Outreach & Professional Development, Service

PROFESSIONAL SERVICES

2019-2023	ICRA , Reviewer	
2019-2023	IROS , Reviewer	
2021	Conference on Robots and Vision (CRV) , Program Committee Member	
2021	IEEE Journal of Oceanic Engineering (IEEE JOE) , Reviewer	
2019-2021	CRV , Reviewer	
2020-2021	Computer Science Faculty Hiring Committee , Student Representative	<i>Univ. of Minnesota</i>

OUTREACH

Sep 2022	Intro to Research in CS (CSCI 8001) , Instructor: Prof. Lana Yarosh, "How to Thrive as a PhD Student" Panelist	<i>Univ. of Minnesota</i>
Mar 2020	Graduate School Information Sessions for international students , Graduate Student Panelist	<i>Univ. of Minnesota</i>
2019	Tech Camp for K-12 students , MnDrive Scholar	<i>Univ. of Minnesota</i>
Mar 2019	Organizing and operating prospective students visiting day , Student Representative	<i>Univ. of Minnesota</i>
Sep 2018	Presenting CSE program and research at the CSE career fair , Student Representative	<i>Univ. of Minnesota</i>
2018	Tech Camp for K-12 students , MnDrive Scholar	<i>Univ. of Minnesota</i>
Aug 2018	Introducing Tech Camp , MnDrive Scholar	<i>Minnesota State Fair</i>
Mar 2018	Organizing and operating prospective students visiting day , Student Representative	<i>Univ. of Minnesota</i>

LEADERSHIP ACTIVITIES

2019-2020	Computer Science Graduate Student Association (CSGSA) , Vice President	<i>Univ. of Minnesota</i>
2018-2020	Minnesota Korean Graduate Student Association (MKGSA) , Vice President	<i>Univ. of Minnesota</i>
2015-2016	Habitat for Humanity , Fundraising Chair	<i>Univ. of Central Florida</i>
2014-2015	IEEE Eta Kappa Nu (HKN) , the honor society of IEEE, Vice President	<i>South Dakota State University</i>
2013-2015	Korean Student Association(KSA) , President	<i>South Dakota State University</i>

PROFESSIONAL MEMBERSHIPS

- IEEE HKN
- Tau Beta Pi (TBP), national engineering honor society
- IEEE

MEDIA COVERAGE

- Feb 2023 **Department of Computer Science and Engineering News, University of Minnesota,**
 CSpotlight: Cleaning Up the Ocean One Robot at a Time
- Feb 2020 **KSTP-TV (an ABC-affiliated station) News,** Low-cost Underwater Robot (LoCO)