

AKSHAYA AGRAWAL

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RESEARCH STATEMENT

I work on task and motion planning for robot teams operating in environments where humans cannot, primarily underwater. My research sits at the intersection of constrained motion planning, multi-robot coordination, and underwater autonomy, with a focus on closing the gap between planning algorithms and real robot deployments. My current work targets autonomous subsea physical connections, enabling ROVs to perform precise intervention tasks that today still require human divers.

EDUCATION

Oregon State University, USA Ph.D. Robotics	<i>Jan 2021 - Present</i> CGPA: 3.9
Oregon State University, USA M.S. Robotics	<i>Jan 2021 - Dec 2025</i> CGPA: 3.9
BITS Pilani Hyderabad Campus, India MSc. (Hons.) Physics + B.E (Hons.) Electronics and Communications	<i>August 2013 - July 2018</i> CGPA: 7.8

PROFESSIONAL EXPERIENCE

Oregon State University, USA <i>Graduate Research Assistant</i>	Sep 2021 - Present
<ul style="list-style-type: none">• Developed cNKZ (Constrained Nonlinear Kaczmarz) for coordinated multi-robot mobile manipulation on manifolds — ICRA 2025• Extended Angler framework for multi-robot underwater simulation and motion planning on BlueROV2 + Reach Alpha 5 arm — OCEANS 2025• Developing guided mating systems for ROV-assisted subsea physical connections• Entrepreneurial Lead, Regional NSF I-Corps (UC Berkeley Hub) — 20+ customer discovery interviews across marine energy and subsea infrastructure• Co-inventor, provisional patent: Modular Construction Units (USPTO 64/012,019)	
Rugged Robotics, USA <i>Robotics Software Intern</i>	Sep 2023 - Jan 2024
Designed mechanisms for calibrating the robot using motion capture system with an accuracy of 0.5 milliradian.	
Oregon State University, USA <i>Graduate Teaching Assistant</i>	Sep 2021 - Mar 2022
MillionEyes Healthcare Pvt. Ltd., India <i>Data Scientist</i>	Aug 2019 - Aug 2020
Capillary Technologies Pvt Ltd, India <i>Robotics Machine Learning Engineer</i>	May 2018 - August 2019
Indian Institute of Science (IISc), India <i>Research Intern</i>	Jan 2018 – May 2018
Industrial Technology Research Institute (ITRI), Taiwan <i>Research Intern</i>	Aug 2017 - Dec 2017

Soothe Healthcare, India
Intern

Oct 2016 – Feb 2017

Grasim Industries, India
Intern

May 2015 – July 2015

Research Centre Imarat (RCI) DRDO, India
Intern

Dec 2014 – Feb 2015

PROGRAMMING SKILLS AND TOOLS

Robotics	ROS 2, Gazebo, ArduSub SITL, MAVROS, OpenCV
Planning	OMPL, MoveIt, PDDL, FOND Planners
Languages	Python (5+ yrs), C++/C (2+ years)
Embedded System Devices	Raspberry Pi, Arduino

PUBLICATIONS

Peer-Reviewed Conference Papers:

1. **A. Agrawal**, E. Palmer, Z. Kingston and G. A. Hollinger, "Underwater Multi-Robot Simulation and Motion Planning in Angler," OCEANS 2025 Brest, BREST, France, 2025, pp. 1-6, doi:10.1109/OCEANS58557.2025.11104649.
2. **A. Agrawal**, P. Mayer, Z. Kingston and G. A. Hollinger, "Constrained Nonlinear Kaczmarz Projection on Intersections of Manifolds for Coordinated Multi-Robot Mobile Manipulation," 2025 IEEE International Conference on Robotics and Automation (ICRA), Atlanta, GA, USA, 2025, pp. 7726-7732, doi:10.1109/ICRA55743.2025.11127991.
3. M. Das, **A. Agrawal**, A. Sonone, R. Gupta, D. Upadhyay, Y.V.D. Rao, and A. Javed, "Developing a bioinspired pole climbing robot," 2016 International Conference on Robotics: Current Trends and Future Challenges (RCTFC), Thanjavur, 2016, pp. 1-6, doi:10.1109/RCTFC.2016.7893400.

Workshop Papers:

1. **A. Agrawal**, E. Palmer, Z. Kingston, and G. A. Hollinger, "Underwater Multi-Robot Simulation and Motion Planning in Angler," In ICRA 2025 Workshop on AQ²UASIM: Advancing Quantitative and QUALitative SIMulators for marine applications, May 23, 2025, Atlanta, GA.
2. **A. Agrawal**, D. Chang, and G. A. Hollinger 2022. Task and Motion Planning for Collective Robot Construction. In ICRA 2022 Workshop on Collective Robotic Construction, May 27, 2022, Philadelphia, PA.

PATENTS

- **Modular Construction Units** (Provisional) · USPTO Application No. 64/012,019 · Filed March 2026
Co-inventors: Jason Pieck, Akshaya Agrawal, and Geoff Hollinger

AWARDS AND HONORS

- **OCEANS Student Poster Competition Travel Grant**
- **Inspire Scholarship Awardee** by Department of Science and Technology, Government of India

INVITED TALKS

- **Shri Ramdeobaba College of Engineering and Management, India:** "Next Generation Robotics"

REVIEWER

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| 1. IEEE International Conference on Robotics and Automation (ICRA) | 2022 - 2026 |
| 2. IEEE International Conference on Intelligent Robots and Systems (IROS) | 2022 - 2026 |

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| 3. IEEE Robotics and Automation Letters (RA-L) | 2023 - 2026 |
| 4. International Journal of Robotics Research (IJRR) | 2024 |

MENTORSHIP AND OUTREACH

- Mentored REU student: Jason Pieck Summer, 2025
- Mentored undergrad student: Parker Mayer 2023 - 2024
- Judged 2024 MATE ROV Oregon Regional Competition 2024 - 2025
- Lead BITS Pilani Hyderabad Campus Robocon'16 Team 2015 - 2016
- Core member of Honey Bee Network: Voices from Grassroots Innovators local chapter 2013 - 2014
- Organized Nirman NGO events like teaching students from rural regions 2013 - 2014