AAKRITI UPADHYAY

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Portfolio: *https://aakupadhyay.github.io/*

EDUCATION

2018 – 23 Ph.D., Department of Computer Science, University at Albany, State University of New York

Research Interests**:** Robotics (Motion Planning), Applied Mathematics, Computational Geometry, and Machine Learning.

2016 – 18 M.Sc., Department of Computer Science, University at Albany, State University of New York

Master's Project: *Investigating Heterogeneous Planning Spaces.*

2011 – 15 B.E., Department of Computer Science and Engineering, University Visvesvaraya College of Engineering (UVCE), Bangalore University.

TECHNICAL SKILLS

Programming languages: C/C++, Python, Unix/Shell, Java, Latex.
Motion Planning Library: OMPL (Open Motion Planning Library), PPL (Parasol Planning Library).
Operating systems: Linux (Ubuntu, Debian, OpenSUSE), Windows, Mac OS.
Software skills: ROS (Robotics Operating System), MATLAB, Gazebo, RViz, Docker, Google Dialogflow, NVIDIA CUDA, Tkiz, GitHub, CMake, VSCode, PyCharm, JetBrain (IntelliJ, CLion).

PROFESSIONAL EXPERIENCE

Nov 2023 – June 2025 Postdoctoral Fellow, Department of Computer Science, Colorado School of Mines.

My research focuses on developing a complete motion planner that utilizes the topology of robot's configuration space to prove infeasible motion plans for manipulator robots.

2017-23 Research Assistant, Department of Computer Science, University at Albany, State University of New York, NY, USA.

I worked for the Robotics Algorithms and Computable Systems (RACS) lab. My responsibilities included:

1. Design and development of motion planning algorithms via integrating topology-based mapping or machine learning techniques.
2. Manuscript preparation for submission to conferences or journals (ref. to publications).
3. Mentor undergraduate/master students on capstone project work.

   I mentored an undergraduate student for the University at Albany Summer Research Program (UASRP) project. The project aims to design an algorithm to classify graspable and non-graspable areas of a teacup for a manipulator robot hand.

Programming languages: C++, Unix/shell script, XML, and Python.

Summer Technology Intern, Living Resources Corporation (LRC), Albany, NY, USA.

2020 I gained experience working on a home assistant robot and developed software to help serve people with intellectual and developmental disabilities. I worked on the development, deployment, training and testing of robot's emotion detection, speech analysis and autonomous driving skills.
Technologies used: JavaScript, REST API, and GitHub/GitLab.

Summer 2019 Summer Research Intern, Oak Ridge National Laboratory (ORNL), Oak Ridge, TN, USA.
I worked in the Department of Computer Science and Mathematics Division (CSMD) for the Discrete Computing Sciences (DCS) group and developed algorithms with application in time-series graphs, semantic mapping, and combinatorial integer optimization.
Programming languages: Python, CUDA C/C++, and PyCUDA.

Spring 2018 Web Technology Intern, Association for the Cooperative Advancement of Science and Education (ACASE), Saratoga Spring, NY, USA.
I developed an online application on the WordPress platform for teachers to help improve evaluation and assessment skills for high school-level education.

2015-16 Software Engineer, NetCracker Technology, Bengaluru, KA, India.
I have worked as a Back-End developer and was involved in the product development for NetCracker's Integration and Mediation Interface used in customer services.
Technologies used: Java, JavaScript, PL/SQL, Regex,JSON/ XML, JIRA, and CI/CD pipelines.

PUBLICATIONS

Aakriti Upadhyay, "Near-Optimal Motion Planning Algorithms Via A Topological and Geometric Perspective" (2023). Computer Science Theses & Dissertations, State University of New York at Albany.

Aakriti Upadhyay, and Chinwe Ekenna. "A New Tool to Study the Binding Behavior of Intrinsically Disordered Proteins." *International Journal of Molecular Sciences (IJMS)*. MDPI, 2023; 24(14):11785.

Aakriti Upadhyay, Mukulika Ghosh, and Chinwe Ekenna. "Minimal Path Violation Problem with Application to Fault Tolerant Motion Planning of Manipulators." 2023 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS). IEEE, 2023.

*Please refer to my portfolio for other publications.