

SHUSHMAN CHOUDHURY

<http://www.andrew.cmu.edu/user/shushmac/>

Education	Carnegie Mellon University 2015 - 2017 M.S in Robotics Current GPA: 4.11 / 4.33 Advisor - Prof. Siddhartha Srinivasa
	Indian Institute of Technology Kharagpur 2011 - 2015 B.Tech in Computer Science and Engineering Final GPA: 9.47/10 Advisor - Prof. Partha Pratim Chakrabarti
Publications	Densification Strategies for Anytime Motion Planning over Large Dense Roadmaps. S. Choudhury, O. Salzman, S. Choudhury and S. S. Srinivasa. <i>ICRA 2017 (To Appear)</i>
	Pareto-Optimal Search over Configuration Space Beliefs for Anytime Motion Planning. S. Choudhury, C. M. Dellin and S. S. Srinivasa. <i>IROS 2016</i>
	A System for Multi-Step Mobile Manipulation: Architecture, Algorithms, and Experiments. S. S. Srinivasa et al. <i>ISER 2016</i>
	Currency Recognition on Mobile Phones. S. Singh, S. Choudhury, K. Vishal and C.V. Jawahar. <i>ICPR 2014</i>
Research Experience	CMU Personal Robotics Lab MS Student Pittsburgh, PA Fall 2015 onwards I work on search-based anytime geometric motion planning algorithms , applied to difficult manipulation tasks. I am interested in intelligent methods to organize the search for solutions on a roadmap graph. My research is validated on our lab's robot platform, HERB. Additionally, I am part of my lab's collaboration with the Toyota Research Institute on a long-term research project for robust multi-step manipulation under uncertainty, where I contribute to both perception and planning. This work has led to 3 published papers in the time that I have been a Master's Student.
	IIT Kharagpur Bachelor's Thesis Project Kharagpur, India Jan 2014 - May 2015 My Bachelor's Thesis Project investigated the problem of stable matchings for multiple course allocation . We presented a new perspective on this well-known problem and obtained a novel proof of its complexity. Furthermore, I contributed to the efforts of the Indian National Informatics Centre to implement a new nationwide system that is being used currently for allocating seats for engineering entrance exams.
	CMU Personal Robotics Lab Summer Scholar Pittsburgh, PA Summer 2014 I was a summer intern at CMU through the Robotics Institute Summer Scholars Program . I worked on our lab's perception stack, specifically on fiducial marker tracking and pose estimation. Furthermore, I contributed both research discussions and code modules to the MS thesis of my student mentor Aaron Walsman, which was on new insights for template-based object detection and pose estimation.

IIT Hyderabad Summer Intern
Hyderabad, India Summer 2013
Advised by Prof. C.V. Jawahar, I developed an experimental mobile application for **recognizing Indian currency notes using computer vision**. The application ran locally and offline, and had an interface for the visually impaired. Our work was published at ICPR 2014, and covered by national media.

Responsibilities and Outreach **Graduate Teaching Assistant, CMU** Spring 2016
Assisted students with regular office hours and tutorial sessions, prepared and evaluated assignments and graded projects for the Robot Autonomy course for graduate students.

HEAR ME Project on Gender Bias in STEM Spring 2016
Interviewed students at the ALEC centre in Pittsburgh about gender bias in STEM fields. I also contributed to editing and publishing interviews on the project website.

Research Mentor, CMU Robotics Institute Fall 2015 onwards
Since Fall 2015, I have mentored **Pengju Jin**, a CMU undergraduate student working on perception for manipulation. In Summer 2016, I mentored **Sumit Kumar**, an IIT Kanpur undergraduate student who worked on configuration space models for planning.

Head, Technology Robotix Society, IIT Kharagpur 2013-14
Head coordinator for ROBOTIX 2014, a major inter-collegiate event. I also worked with a 3-tier team to conduct robotics hands-on sessions, workshops and events.

Governor, Debating Society, IIT Kharagpur 2013-14
Mentored multiple cohorts of junior members of the society. I introduced them to the principles of debating and co-ordinated their participation in national tournaments.

National Service Scheme, IIT Kharagpur (distinguished service) 2011-13
As a Central Team Member, I was responsible for documenting our efforts to improve the livelihoods of rural residents of Kharagpur. This was in addition to my own volunteering.

Technical Skills **Programming:** C, C++, Python, Matlab, L^AT_EX

Libraries and Tools: ROS, OMPL, OpenCV, AndroidSDK, Visual Studio

Awards and Honours 1 of 3 students out of all IITs selected for the Inlaks Award of Excellence, 2012-13.
Reached the ACM International Collegiate Programming Contest Indian regionals in 2013.
All India Rank of 7 in the National Cyber Olympiad 2008.

Selected Projects **Personal Robotics Lab Software Stack** Fall 2015 Onwards
Have made important contributions to several Python and C++ packages that are used by the Personal Robotics Lab and run on the lab's robots. A non-exhaustive list includes [aikido](#), [prpy](#), [offscreen.render](#).

Swarm Robotics Fall 2014
Initiated a long-term project on swarm robotics funded by IIT Kharagpur.

Vision-based amateur robotics 2011 - 2013
Successfully mentored a group at the IEEE certified Winter Workshop 2012-13 at IIT Kharagpur, for creating a robot capable of lane following using computer vision alone.