

# SOURISH GHOSH

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<i>web:</i> <a href="https://sourishghosh.com">https://sourishghosh.com</a>	<i>email:</i> <a href="mailto:sourishghosh@gmail.com">sourishghosh@gmail.com</a>	<i>GitHub:</i> <a href="https://github.com/sourishghosh">github.com/sourishghosh</a>	<i>Google Scholar:</i> 45-8VtAAAAAJ
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## EDUCATION

Carnegie Mellon University	August, 2019 - May, 2022 <i>Department:</i> Robotics Institute	<b>M.S. in Robotics (MSR)</b> GPA: 4.11/4.0
Indian Institute of Technology (IIT), Kharagpur	July, 2014 - April, 2019 <i>Department:</i> Mathematics	<b>Integrated M.Sc. (B.Sc. + M.Sc.)</b> <i>Major:</i> Mathematics and Computing GPA: 8.5/10

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## EXPERIENCE

<b>Apple Inc.</b>   Machine Learning Engineer   Boulder, CO	July, 2022 - <i>present</i>
<b>Apple Inc.</b>   Computer Vision Intern <i>Topic:</i> 3D Object Pose Tracking with Transformers <i>Research Areas:</i> transformers, detection and tracking, temporal modeling	May, 2021 - Aug, 2021
<b>Carnegie Mellon University</b>   MSR Student, AirLab <i>Thesis:</i> Vision-based Aircraft Detection and Tracking for Detect-and-Avoid <i>Research Areas:</i> small object detection, object tracking, deep learning, ego-motion estimation	<i>Adviser:</i> <a href="#">Prof. Sebastian Scherer</a>   Aug, 2019 - May, 2022
<b>Princeton University</b>   Summer Intern, IRoM Lab <i>Topic:</i> Learning Data-Driven Dynamic Models of Task-Relevant Perceptual Features for Robot Controllers <i>Research Areas:</i> control theory, deep learning, variational autoencoders, model-predictive control	<i>Adviser:</i> <a href="#">Prof. Anirudha Majumdar</a>   June - Aug, 2018
<b>NASA Jet Propulsion Laboratory</b>   Summer Intern, Group 347E <i>Topic:</i> Probabilistic Kinematic State Estimation for Motion Planning of Planetary Rovers <i>Research Areas:</i> probabilistic state estimation, risk-aware motion planning	<i>Adviser:</i> <a href="#">Dr. Masahiro Ono</a>   May - July, 2017
<b>University of Massachusetts Amherst</b>   Summer Intern, AMRL <i>Topic:</i> Joint Perception and Planning for Efficient Obstacle Avoidance using Stereo Vision <i>Research Areas:</i> obstacle avoidance, stereo vision, motion planning	<i>Adviser:</i> <a href="#">Prof. Joydeep Biswas</a>   May - Aug, 2016
<b>Aerial Robotics Lab, Kharagpur</b>   Software Team Member <i>Topic:</i> Building unmanned emergency aerial vehicles to drop medical supplies in less accessible regions of rural India. <i>Research Areas:</i> localization and mapping, motion planning, control theory	<i>Adviser:</i> <a href="#">Prof. Somesh Kumar</a>   Feb, 2017 - Apr, 2019

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## SELECTED PUBLICATIONS

- [5] **AirTrack: Onboard Deep Learning Framework for Long-Range Aircraft Detection and Tracking**  
by Sourish Ghosh, Jay Patrikar, Brady Moon, Milad Moghassem Hamidi, Sebastian Scherer  
In *2023 International Conference on Robotics and Automation*. To Appear, May 2023. [\[PDF\]](#)
- [4] **MAARS: Machine learning-based Analytics for Automated Rover Systems**  
by Masahiro Ono, Brandon Rothrock, ..., Sourish Ghosh, ..., Hyoshin Park  
In *2020 IEEE Aerospace Conference*. Mar 2020. [\[PDF\]](#)
- [3] **Probabilistic Kinematic State Estimation for Motion Planning of Planetary Rovers**  
by Sourish Ghosh, Kyohei Otsu, and Masahiro Ono  
In *Intelligent Robots and Systems, IROS, 2018 IEEE/RSJ International Conference*, (Madrid, Spain). Oct 2018. [\[PDF\]](#)
- [2] **Fast Approximate Clearance Evaluation for Rovers with Articulated Suspension Systems**  
by Kyohei Otsu, Guillaume Matheron, Sourish Ghosh, Olivier Toupet, and Masahiro Ono  
In *Journal of Field Robotics*. July 2019. [\[PDF\]](#)
- [1] **Joint Perception And Planning For Efficient Obstacle Avoidance Using Stereo Vision**  
by Sourish Ghosh and Joydeep Biswas.  
In *Intelligent Robots and Systems, IROS, 2017 IEEE/RSJ International Conference*, (Vancouver, Canada). Sep 2017. [\[PDF\]](#)
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## SELECTED OPEN-SOURCED PROJECTS

<b>Stereo Dense 3D Reconstruction Tool</b> 3D reconstruction using ELAS. <a href="#">[CODE]</a>	<b>JPP</b> C++ implementation of [1]. <a href="#">[CODE]</a>	<b>RRT Simulator</b> Visualizing RRTs. <a href="#">[CODE]</a>
<b>PyBullet Turntable Controller</b> Task-relevant features for MPC. <a href="#">[CODE]</a>	<b>Generating Disparity Maps</b> Algorithms for disparity maps. <a href="#">[CODE]</a>	<b>Stereo Camera Calibration Tools</b> <a href="#">[PINHOLE]</a> <a href="#">[FISHEYE]</a> <a href="#">[BLOG]</a>