

# SOURISH GHOSH

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Languages and Tools:  
C/C++, Python, OpenCV, ROS,  
TensorFlow, Pytorch,  
AirSim, Gazebo, Docker

## EDUCATION

Carnegie Mellon University

August, 2019 - present

Department: Robotics Institute

Ph.D. in Robotics

GPA: 4.0/4.0

Indian Institute of Technology (IIT),  
Kharagpur

July, 2014 - April, 2019

Department: Mathematics

Integrated M.Sc.

Major: Mathematics and Computing

GPA: 8.5/10

## EXPERIENCE

Apple Inc. | Computer Vision Intern

May, 2021 - Aug, 2021

Topic: 3D Object Pose Tracking with Transformers

Research Areas: transformers, detection and tracking, temporal modeling

Carnegie Mellon University | Ph.D. student, AirLab

Adviser: [Prof. Sebastian Scherer](#) | Aug, 2019 - present

Topic: Long-range vision-based aircraft detection, tracking, and motion estimation

Research Areas: small object detection, object tracking, deep learning, state estimation

Princeton University | Summer Intern, IROMLab

Adviser: [Prof. Anirudha Majumdar](#) | June - Aug, 2018

Topic: Learning Data-Driven Dynamic Models of Task-Relevant Perceptual Features for Robot Controllers

Research Areas: control theory, deep learning, variational autoencoders, model-predictive control

NASA Jet Propulsion Laboratory | Summer Intern, Group 347E

Adviser: [Dr. Masahiro Ono](#) | May - July, 2017

Topic: Probabilistic Kinematic State Estimation for Motion Planning of Planetary Rovers

Research Areas: probabilistic state estimation, risk-aware motion planning

University of Massachusetts Amherst | Summer Intern, AMRL

Adviser: [Prof. Joydeep Biswas](#) | May - Aug, 2016

Topic: Joint Perception and Planning for Efficient Obstacle Avoidance using Stereo Vision

Research Areas: obstacle avoidance, stereo vision, motion planning

Aerial Robotics Lab, Kharagpur | Software Team Member

Adviser: [Prof. Somesh Kumar](#) | Feb, 2017 - Apr, 2019

Topic: Building unmanned emergency aerial vehicles to drop medical supplies in less accessible regions of rural India.

Research Areas: localization and mapping, motion planning, control theory

## SELECTED PUBLICATIONS

[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. [\[PDF\]](#)

## SELECTED OPEN-SOURCED PROJECTS

**Stereo Dense 3D Reconstruction Tool**

3D reconstruction using ELAS. [\[CODE\]](#)

**JPP**

C++ implementation of [1]. [\[CODE\]](#)

**RRT Simulator**

Visualizing RRTs. [\[CODE\]](#)

**PyBullet Turntable Controller**

Task-relevant features for MPC. [\[CODE\]](#)

**Generating Disparity Maps**

Algorithms for disparity maps. [\[CODE\]](#)

**Stereo Camera Calibration Tools**

[\[PINHOLE\]](#) [\[FISHEYE\]](#) [\[BLOG\]](#)