Sourish Ghosh

address:
AB-509, LBS Hall
IIT Kharagpur,
Kharagpur, WB 721302 INDIA

web: http://sourishghosh.com
email: sourishg@iitkgp.ac.in
voice: +91 8902234618
GitHub: https://github.com/sourishg

Education

Indian Institute of Technology, Kharagpur	July, 2014 - April, 2019 (*expected*)	**Integrated M.Sc.** *Department*: Mathematics *Major*: Mathematics and Computing *CGPA*: 8.70/10
Garden High School, Kolkata	April, 2012 - February, 2014	**Indian School Certificate Board** *Aggregate*: 94%

Publications

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. (to appear)

A Fuzzy Logic System to Analyze a Student's Lifestyle.
by Sourish Ghosh et al.
In *2017 9th International Conference on Advanced Computational Intelligence, ICACI 2017*, (Doha, Qatar), Feb. 2017.
arXiv:1610.03957 (*pre-print*)

Research Experience

NASA Jet Propulsion Laboratory May, 2017 - *present*
Summer Intern, Robotic Systems Estimation, Decision, and Control Group
Topic: Risk-aware Probabilistic Motion Planning for Mars Rovers
Research Areas: mobile robotics, path planning, risk-aware planning
Advisor: Dr. Masahiro Ono

University of Massachusetts, Amherst May, 2016 - August, 2016
Summer Intern, Autonomous Mobile Robotics Lab
Topic: Joint Perception and Planning for Efficient Obstacle Avoidance using Stereo Vision
Research Areas: mobile robotics, stereo vision, navigation planning
Advisor: Dr. Joydeep Biswas

Aerial Robotics, IIT Kharagpur February, 2017 - *present*
Software Team Member
Currently developing the software architecture to participate in *IARC 2017*. Also, working on active localization of ground robots on a grid-based arena using a downward facing camera from a micro aerial vehicle.
Research Areas: indoor localization, strategy planning

Advisor: Dr. Jayanta Mukhopadhyay

Kharagpur RoboSoccer Students' Group, IIT Kharagpur February, 2015 - April, 2016
Software Team Member
Implemented motion planning algorithms for RoboCup Small Sized League and MiroSot, FIRA. Bronze winning team member at MiroSot, FIRA 2015.
Research Areas: multi-agent robot systems, robot soccer, motion planning
Advisor: Dr. Jayanta Mukhopadhyay

Responsibilities

Technology Robotix Society, IIT Kharagpur February, 2016 - January, 2017
Head
I was responsible for designing a computer vision event which was held at *Kshitij 2017*, Asia's largest techno-management fest. I helped conduct technical workshops across India to spread the culture of robotics. Also I organized weekly lectures on autonomous robotics for over 300 students round the year along with workshops and hackathons in my college. I led a three-tier team to successful planning and execution of all these events.

IEEE Robotics Winter Workshop, IIT Kharagpur December, 2015
Image Processing Mentor
I conducted a week-long workshop for first and second year undergraduates at IIT Kharagpur. I taught basic image processing using OpenCV and C++, and micro-controller programming using an Arduino UNO board. As a final project of the workshop I helped the students build a simple object tracking differential drive robot.

Projects

Stereo Dense 3D Reconstruction Tool
This is a ROS package for real-time 3D reconstruction from stereo images. Currently this version uses LIBELAS for generating dense disparity maps as a baseline. It also has a nice tool for transforming point clouds in different reference frames.
Repository: `https://github.com/sourishg/stereo-dense-reconstruction`

RRT Simulator
Developed an interactive GUI interface to simulate a path generated by RRTs avoiding obstacles using C++ and Qt.
Repository: `https://github.com/sourishg/rrt-simulator`

Stereo Camera Calibration Tools
Developed some tools for the calibration of stereo cameras using the checker-board method using C++ and OpenCV for both pinhole model and fisheye model lenses.
Pinhole Model: `https://github.com/sourishg/stereo-calibration`
Fisheye Model: `https://github.com/sourishg/fisheye-stereo-calibration`

Soft Computing Term Project
Developed an Android application that determines the lifestyle of a person. A fuzzy logic based approach was used to generate an analysis of how a person spends his/her day based on his/her phone's GPS data and how much time he/she spent at a particular location. Peer reviewed to be the best term project for Spring 2016.
Advisor: Dr. Sudhir Kumar Barai
Repository: `https://github.com/nishnik/YOLO`

code.fun.do, Mircrosoft Hackathon
Developed a mobile game for Windows Phone using C# and XAML. The idea of the game is to stop incoming

missiles by tapping on them, before they reach their target.
Repository: `https://github.com/sourishg/saving-private-ryan`

Awards and Achievements

MiroSot, FIRA July, 2015
MiroSot is an international five-a-side robot soccer tournament. I was a part of the bronze-winning team of IIT Kharagpur.

Best Term Project, Soft Computing Course Spring, 2016
Designed a mobile application that tracks the daily lifestyle of a person. Peer reviewed as the best project.

INSPIRE Scholarship Recipient July, 2014 - *present*
A prestigious scholarship awarded by the Government of India to the top 0.07% students who appeared for the JEE Advanced examination in India, and pursuing a career in Science.

SudoCode, Kshitij 2015 January, 2015
Participated in an online coding competition at *Kshitij 2015*, Asia's largest techno-management fest. Awarded the best fresher at IIT Kharagpur.

Best Fresher, HackerEearth Freshers' Challenge, IIT Kharagpur October, 2014
Finished first amongst all first years in an ACM-ICPC style coding contest organised by HackerEarth.

Inter IIT Sports Meet December, 2014
Represented IIT Kharagpur in table tennis and secured the bronze medal.

Table Tennis State Championship, West Bengal November, 2010
Member of South 24 PGS District silver winning table tennis team.

Relevant Coursework

IIT Kharagpur

Completed
Linear Algebra
Partial Differential Equations
Transform Calculus
Probability and Statistics
Discrete Mathematics
Design and Analysis of Algorithms
Soft Computing
Basic Electronics
Computer Organization and Architecture
Object Oriented Systems Design

Ongoing
Operation Research
Modern Algebra
Measure Theory and Integration
Switching and Finite Automata

Additional Courses

Completed
Machine Learning (Coursera)
Introduction to Computer Vision (Udacity)
Artificial Intelligence for Robotics (Udacity)

Ongoing
Deep Learning (Udacity)
Probabilistic Graphical Models (Coursera)

Skills

Programming
C, C++, Java, Python, LaTeX

Libraries and Tools
OpenCV, ROS, Qt, GNU Octave, AndroidSDK
