SHAILJA

Indian Institute of Technology (IIT), Kharagpur ◇ shailjasah12@gmail.com

INTERESTS

Software Engineering, Design and Analysis of Algorithm, Computer Vision, Robotics

EDUCATION

Bachelors of Technology (B.Tech) in Instrumentation Engineering *July 2016*
Electrical Engineering Department, IIT Kharagpur
Overall CGPA : 8.15/10

RESEARCH PROJECTS

University of Washington (UW), Seattle Sept 2016 - Nov 2016
Mentor : Prof. Tyler Folsom, Computing and Software Systems Division

→ Localization and Navigation of a Self Driving Tricycle, Elcano

- Successfully developed a fuzzy algorithm to estimate the position of a trike using GPS and dead reckoning. A lane detection algorithm was also developed to update the trike position from the edge to complement the GPS based positioning.
- Developed an optical odometer for 2-D displacement measurement using 30×30 pixel image to track trike's motion. In addition to the dead reckoning and lane detection algorithms that I implemented for the autonomous navigation, the use of this odometer led to a better position estimation of the trike, covering most corner cases as well.
- In the media : UW Bothell News — The Woodinville Weekly — The Komo News TV Report

Indian Institute of Technology (IIT), Kharagpur Jul 2015 - April 2016
Mentor : Prof. Jayanta Mukhopadhyaya, Computer Science & Engineering Department

→ Visual navigation of mobile robot using monocular vision

- Developed an algorithm to generate a complete map of the traversable region for a robot using monocular vision.
- Multiple images taken by a simple webcam were used for obstacle detection and avoidance.
- A simple mapping technique using inverse perspective mapping and occupancy grids was used, which is robust, and supports very fast updates.
- Simple Linear Iterative Clustering (SLIC) was used for segmentation to reduce the memory and computation cost. A manuscript that contains its application is under preparation.

INDUSTRIAL EXPERIENCE

Software Development Engineer, Flipkart Internet Pvt Ltd. Banglore Dec 2016 - Present

- Employed at Flipkart, India's largest e-commerce company. Developed a software to automate the return flow of orders. Currently, I am playing major role in order management system migration to an improved version dealing with large amount of data.

Software Development Intern, GreyOrange Robotics, Gurgaon Jun 2016 - Sept 2016

- Developed an algorithm to reduce the processing time of orders by implementing an idea of classifying each order as multiple or single item order. The algorithm was developed on the functional programming language - Erlang. Single-item orders were stacked together in a bin to be processed as multi-items orders, thus increasing the throughput.

Technical Consultant, PricewaterhouseCoopers(PwC), India Jun 2015 - Sept 2015

- Worked as a trainee in the technical consulting sub business unit of the advisory line of service in PricewaterhouseCoopers (PwC) Pvt. Ltd. I generated data models using Toad data modeller software and supported the r-DBMS system to assist in the process of implementing a relevant core banking system in a financial institution to facilitate sound business operations and growth.

SELECTED PROJECTS

Plots to Table Converter
OpenSoft Inter-Hostel Competition, IIT Kharagpur 2016

- Developed a software for extracting information from plots in PDFs to create data tables. Set of scanned pages were used as input, with each page having one or more plots embedded in text.
- Hough line transformation was used to find the plot region. Further smoothening and color segmentation processes were used for curve extraction.
- Algorithms were developed to recognize plots, curves, captions, axis ranges etc. and a data set of two dimensional tables was created.

Unmanned Substation Transformer Control

- Developed a system to control the transformers autonomously, at an electrical power substation. Interfaced GSM SIM Modem with Arduino microcontroller to receive/make calls and SMS. This system along with a DTMF Decoder was used to control a transformer switch by making calls/SMS.

Gesture Controlled Robot
Minefield Event in Kshitij, Technical Fest, 2015 IIT Kharagpur

- Designed an accelerometer based hand gesture controlled robot. Hand gestures could be used as input signals to drive the robot in different direction and detect mines using a metal detector circuit. The robot could rescue victims using a gripper attached to it.

RELEVANT COURSES

Computer Science & Engineering and Mathematics :

- Design & Analysis of Algorithm, Object Oriented Programming Language, Software Engineering, Advance Image Processing & Computer Vision, Advance Algorithm and Machine Learning, Programming & Data Structure, Matrix Algebra, Computer Architecture & Operating System, Probability & Stochastic processes.

Electrical Engineering :

- Data Communication, Instrumentation Device, Digital Image Processing, Digital Signal Processing, Embedded System Design.

COMPUTER SKILLS

Programming Languages	C, Python, C++, Java, Assembly Language, Erlang, OpenCV
Other Software	MATLAB, Git, Arduino IDE, Proteus
Operating System	Linux, Ubuntu, Windows

POSITIONS OF RESPONSIBILITY

Team Leader, OpenSoft Team (July, 2015-16)

- I initiated and formed a team with 8 other undergraduate members and led the team to participate in the Inter-Hostel OpenSoft competition to win the Bronze award for our software.

Team Leader, Gopali Youth Welfare Society(GYWS) (Apr, 2013-15)

- Led the team of GYWS, an NGO run by students and faculty of the college. I was responsible for planning different activities, managing the overall action plan and coordinating between different teams of the society.

Mentor, Student Welfare Group(SWG) (July, 2014-16)

- I was responsible for ensuring the academic and personal well being of three allotted men-tees.