Aman Chandra

amanchandra333.github.io | github.com/amanchandra333
amanchandra@iitkgp.ac.in | +91 8967126457

RESEARCH

AERIAL ROBOTICS KHARAGPUR | STUDENT RESEARCH GROUP

March 2016 - Present | Project Website
Guided by: Prof. Somesh Kumar | Prof. Jayanta Mukhopadhyay

- Technologies: ROS, Gazebo, OpenCV, MATLAB, C++, Python.
- Working on **3D reconstruction of point cloud data** from stereo camera to implement **SLAM** and obstacle avoidance in outdoor environment.
- Developed algorithms for **vision based autonomous landing** of hexacopter on or in vicinity of mobile robotic platform.
- Designed **State Machine** for the system to participate in IARC 2017.
- Team Description Paper of IIT Kharagpur for IARC 2017.
- Implemented control systems and **obstacle avoidance** for the drone | Link
- Made a **two-layered PID controller** on MATLAB for testing purposes | Link

SWARM ROBOTICS | STUDENT RESEARCH GROUP

March 2016 - Present | Project Website
Guided by: Prof. Pallab Dasgupta | Prof. Somesh Kumar

- Set up **mesh network** between robots using B.A.T.M.A.N. | Link
- Achieved communication between **decentralized robots** over WiFi using **protobuf** messages and **ignition transport** .
- Designed the **embedded stack** for the mobile robots | Link

PROJECTS

- REINFORCEMENT LEARNING
  Implemented **Q-Learning** algorithm on Arduino for a robot with a 2-DOF arm and an encoder to learn to crawl on its own | Project Link
- FIELD-PROGRAMMABLE GATE ARRAY
  Implemented **UART Communication** and multiple combinatorial logic circuits on Arty Artix-7 FPGA | Projects Link
- WAREHOUSE RECONNAISSANCE DRONE
  Designed and tested a line-follower and Bar code/ QR Code/ Hazardous Sign detector drone using **color segmentation** **attitude controller** and **template matching** for mapping inventory of a warehouse | Project Link
- 2D IMAGE STITCHING
  Calculated **homographies** of multiple images to finally stitch them to get a panoramic view using **RANSAC** and OpenCV libraries | Project Link
- COGNITIVE MUSIC PLAYER
  Designed an app as a part of **Microsoft Code.Fun.Do** using **Microsoft Cognitive Services** and **Firebase Cloud Storage** to play music based on user's facial expressions | Project Link

WORK EXPERIENCE

TECHNOLOGY ROBOTIX SOCIETY

Student Head | Jan 2017 - Present

- **Official Android App:** Added **Firebase Authentication** portal, improved notification reception using **Firebase Cloud Messaging** and added **dynamic links** to tutorials from the official website | Project Link
- Mentored **IEEE workshops** on **Image Processing** (Scoring of live football match feed) and **Autonomous Robotics and Embedded Systems** .
- Leading a three tier team of 36 students towards the conduction of national level robotics events in techno-management fest, Kshitij, IIT Kharagpur.

EDUCATION

IIT KHARAGPUR

B.Tech+M.Tech in Biotechnology
Expected April 2020 | Kharagpur, India

ST. MICHAEL'S HIGH SCHOOL

ALL INDIA SENIOR SCHOOL CERTIFICATE
Grad. March 2015 | Patna, India

SKILLS

PROGRAMMING

Proficient:
C • C++ • MATLAB
Experience:
Java • Python • VHDL • CUDA

ROBOTICS

ROS • Gazebo • Arduino • FPGA • MAVLink • rviz • Tensorflow • OpenCV

TOOLS

Linux • GIT • Visual Studio • Docker

COURSEWORK

UNDERGRADUATE

Partial Differential Equations
Probability and Statistics
Electrical Technology
Basic Electronics

MOOC

Algorithms
CNNs for Visual Recognition
Introduction to Computer Vision
Control of Mobile Robots
Machine Learning

AWARDS

Jan 2018	**Gold Medal**	Warehouse Inventory Check, 6th Inter IIT Technology Meet, 2018.
Aug 2017	**Most Innovative Design Award**	2017 Dream Angel Cup, International Aerial Robotics Competition, Beijing.
Oct 2016	**Top 4 Teams**	National Autonomous Robotics Event, NSSC'16.
May 2015	**Top 3% applicants**	Joint Entrance Exam conducted by IIT.