Aman Chandra

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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
- 2D IMAGE STITCHING
  Calculated **homographic transformation** of multiple images to finally stitch them to get a panoramic view | Project Link

WORK EXPERIENCE

TECHNOLOGY ROBOTIX SOCIETY
Student Head | Jan 2017 - Present

- Official Android App: Added **Firebase Authentication** portal, improved notice board 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.
- Designed an autonomous robotics event based on weight detection and USART communication, which saw over 50 national teams in Kshitij 2017.

MICROSOFT CODE.FUN.DO
Oct - Nov 2016 | Team Head | Student Hackathon

- Designed an app using **Microsoft Cognitive Services** and **Firebase Cloud Storage** to play music based on user's facial expressions | Project Link

EDUCATION

IIT KHARAGPUR
B.Tech + M.Tech in Engineering
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++
Experience:
Java • Python • MATLAB • VHDL

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

TOOLS
Linux • GIT • Visual Studio • Docker

COURSEWORK

UNDERGRADUATE
Partial Differential Equations
Probability and Statistics
Electrical Technology
Basic Electronics

MOOC
Algorithms
Perception
Aerial Robotics
Control of Mobile Robots
Computational Motion Planning

AWARDS

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 Examination conducted by IIT.