Ankush Singh

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Third Year Undergraduate, Department of Electrical Engineering

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Academic Qualifications

Year	Degree	Institute	CPI/%
2015-Present	B.Tech	Indian Institute of Technology, Kanpur	9.3/10
2015	CBSE (XII)	Convent of Gagan Bharti Sr.Sec.School, New Delhi	93.2%
2013	CBSE (X)	Convent of Gagan Bharti Sr.Sec.School, New Delhi	10.0

Scholastic Achievements

- Secured **All India Rank -940** in **JEE Advanced 2015** among 150K candidates
- Awarded **Kishore Vaigyanik Protsahan Yojana (2014) Fellowship** with an AIR of **808** among 1 Lakh students
- Awarded **Academic Excellence Award** for outstanding academic performance in 2015-16 by Director, IIT Kanpur
- Awarded **Certificate of Merit** in **15th National Science Olympiad** for State rank **167** and International Rank **1698**
- Awarded **Certificate of Merit** from CBSE for having secured 10.0(out of 10.0) GPA in Class X.
- Recipient of **MCM(Merit-Cum-Means)** scholarship (awarded based on academic performance), IIT Kanpur

Key Projects

- **Real-Time Obstacle Avoidance of Pioneer-P3DX using a new Selective Strategy** (*May'17-July'17*)
  Project Supervisor, Laxmidhar Behera, Professor, Department of Electrical Engineering, IIT Kanpur
  - Aimed to improve the robot-navigation guidance strategy of **Pioneer-P3DX** through a vision-based selective approach
  - The approach was to compare the optical flow of the centre with a suitable threshold value and then selectively tune the guidance in order to differentiate between the case of symmetry of obstacles from the case of a free field
  - Implemented **Horn-Schunck Optical flow algorithm** for better and smooth optical flow via **Kinect XBOX 360** mounted on the bot and then tested the guidance results for corridor, wall and random obstacle scenarios where the robot's motion was controlled using **ROSARIA** package in **ROS**
- **Autonomous Chess Playing Robot** (*May'16-June'16*)
  Robotics Club, Sci-Tech Summer Camp
  - Aim was to make an intelligent robot that can play Grandmaster -level chess using **MiniMax algorithm**
  - Designed and fabricated the arm of the robot in **SolidWorks** using principles of inverse kinematics in accordance with the available motor specifications and finally simulated the design (**URDF** format) using **Ros-Moveit Assistant**
- **Rotatory Combination Locker** (*Aug'16-Nov'16*)
  Course Project TA201A
  - Designed and developed a rotatory-combination locker which had over 2 billion possible combinations as a nice safety keyless mechanism to be used in offices and banks. Fabricated the model using metallurgical processes like casting, brazing, welding, sheet metal forming.

Technical Skills

- **Programming Languages** : C, C++, Java, Python, Latex, HTML
- **Softwares/Libraries** : Ros, Matlab, OpenCV, Eclipse, SolidWorks, Autocad.

Relevant Courses

Data Structures, Algorithms(A)	Fundamentals of Computing(A)	Probability and Statistics(A)
Control System Analysis(A)	Microelectronics-1(A)	Electromagnetic Theory
Principle of Communications*	Power Systems*	Digital Electronics*
Linear Algebra and ODE(A)	Partial Differential Equations(**A***)	Introduction to Philosophy(**A***)

* Current Courses, A*-Outstanding Performance

Positions of Responsibility

- **Student Guide** (*July'16-Apr'17*)
  - Personally mentored a group of 6 freshmen in acclimatizing to the Institute′s new environment and guided them throughout their first year. Successfully conducted the **Orientation Programme** for freshers with a team of 130 members.
- **Academic Mentor** (*July'16-Apr'17*)
  - Gave academic assistance to freshmen students in **Mathematics (I / II)** through hostel-level doubt-clearing sessions, remedial lectures as well as involved in one-to-one tutoring of many needy students

Co - Curricular Activities

- Interested in Chess and participated in Chess Competitions in Udghosh- annual sports festival of IIT Kanpur
- Actively participated in spiritual programmes like reading of ancient scriptures including Bhagawad Gita and assisted in organizing similar spiritual trips across the nation.