

# Rutav Shah

D 414, Nehru Hall,  
Indian Institute of Tehnology, Kharagpur  
West Bengal, India - 721302

Email-id : [rutavms@gmail.com](mailto:rutavms@gmail.com)  
Mobile No.: +91 9969 896 195  
Github: <https://github.com/ShahRutav/>

## ACADEMIC DETAILS

Education	Institute	Year	CPI / %
B. Tech: Computer Science and Engineering	IIT Kharagpur	June'18 - Present	9.69 / 10

## MAJOR PROJECTS

- **Constrained iterative Linear Quadratic Regulator (CiLQG)** (Research Project)  
(Dec'19 - Present)
  - Modified version of **iterative Linear Quadratic Controller** in order to incorporate dynamic obstacles, control constraints and model uncertainties.
  - Extensive testing on simulator has been conducted considering various driving scenarios.
- **Optimal Trajectory Generation in Frenet Frame**, *Autonomous Ground Vehicle*, IIT Kgp  
(Guide: Prof. Debashish Chakravarty, Aug'19 - Dec'19)
  - Worked with a team of undergraduates on implementing a **novel sampling based planner** catered towards high speed scenarios and adapt it to high traffic urban scenarios.
  - Tested the planner on Gazebo and have developed a full stack software that runs on Mahindra E2O.
- **EkLavya 7.0, Intelligent Ground Vehicle Competition (IGVC), 2019**, *Autonomous Ground Vehicle*, IIT Kgp  
(Guide: Prof. Debashish Chakravarty, May'19 - June'19)
  - Adjudged **2nd** position in **IGVC, 2019**.
  - Worked on **Robot localisation**, **Time Elastic Bound ROS local planner**, **lane detection** and **way-point naivgation**.
  - Implemented **Ransac** (Random Sample Consensus)

## OTHER PROJECTS

- **Proposal for Agrobotics Project**  
(Guide: Prof. Debashish Chakravarty, Aug'19 - Jan'20)
  - Led a team of undergraduate students to build a proposal for agricultural robotics that was pitched to the Government of India. It consisted of extreme care and formatting of the proposal to the government norms, closely working with high ranking university and government officials. The proposal got accepted on Jan, 2020.

## AWARDS AND ACHIEVEMENTS

- **2nd Position, Mathematical Olympiad.**  
*Indian Institute of Technology, Kharagpur, 2019*
- **JEE Advanced, All India Rank 257.**  
*Indian Institute of Technology (IITs), 2018*
- **KVPY, All India Rank 278**  
*Department of Science and Technology, Government of India, 2017*
- **Merit in Indian National Mathematical Olympiad**  
*Homi Bhabha Centre for Science Education (HBCSE), 2016*

## TECHNICAL SKILLS

- **Languages** C, C++, Python,  $\LaTeX$ .  
**Libraries and Tools** OpenCV, ROS, Carla, Gazebo.  
**Field of Interest** Path Planning, Controls, Machine Learning.