

Utkarsh Aashu MISHRA

PERSONAL DATA

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EDUCATION

JULY 2017 - Present Bachelors of Technology in MECHANICAL ENGINEERING
Indian Institute of Technology(IIT), Roorkee, India
CGPA: 9.036/10 | [Detailed List of Courses](#)

INTERESTS

Legged Robotics, Autonomous Vehicles, Parallel Robotics, Automatic Control, Optimization, Deep Learning, Reinforcement Learning

RESEARCH EXPERIENCE

Ongoing
DEC 2019 Planning and Control of Bipedal Robot in transition from Static to Moving Surfaces
IIT Roorkee, India
Developed forward kinematic and ANN based inverse kinematic model for the 8-DOF Bipedal Robot
Extending to Dynamic planning and control as a learning agent based on Deep Deterministic Policy Gradient learning method.
Used ZMP stability, Hybrid Zero Dynamics (HZD), Actor-Critic deep reinforcement learning and reward function generation

Nov 2019
AUG 2019 Path Planning and Optimization of Cable-Driven Parallel Robots
IIT Roorkee, India
Worked on path planning through genetic algorithm and workspace analysis of Cable Driven Parallel Robots
Dynamic optimization considering cable tensions and non-negligible cable mass. Cable sagging and Collision constraints are also considered

TEAM PROJECTS

Current
JAN 2018 Mechanical and Driverless Subsystem Member
IIT Roorkee Motorsports, official Formula Student Team of IIT Roorkee
Experience of Designing and Fabricating an Electric Vehicle from scratch.
As a member of the Autonomous Algorithms Subsystem, dedicated to vision-based Localization, Mapping and motion planning for our upcoming proposed vehicle
Works include designing and programming models efficient enough to follow a vision and LIDAR based localization and path planning for unknown racing circuits.
Driver Modelling based on driver characteristics prediction and validation using Data Acquisition (DAQ) system.
MPC based trajectory optimization for a race track on the basis of longitudinal, lateral and cornering stability.

SKILLS

Programming Languages: C++, PYTHON
Softwares: Anaconda, ROS, MATLAB, Visual Studio, Solidworks, Ansys (Design, Meshing, Structural, Thermal, Fluent)
Other Skills: UBUNTU, \LaTeX
Key Courses: Kinematics and Dynamics of Machines, Vibrations and Noise, Control Systems and Automatic control
Coursera Courses: State Estimation and Localization for Self-Driving Cars ([Certificate](#)), Visual Perception for Self-Driving Cars ([Certificate](#)), Control of Mobile Robots ([Certificate](#))

AWARDS AND ACHIEVEMENTS

JAN 2020 Secured Second Runners Up position in Formula Green 2020 with [IIT Roorkee Motorsports](#)
MAY 2019 Selected for the SPARK Research Internship Program by IIT Roorkee ([Certificate](#))
MAY 2017 Joint Entrance Examination, Advanced (Indian Institute of Technology)
All India Rank 2223, 98.99 percentile
MAY 2017 Awarded the prestigious KVPY Scholarship (Kishore Vaigyanik Protsahan Yojana) in-stream SX (2016) ([Certificate](#))
(Instituted by the Department of Science and Technology, Government of India)
MAY 2017 Achieved Merit Certificate in Physical Education in the CBSE AISSE 2017 (Standard 12)(top 0.1%of examinees) ([Certificate](#))

POSITION OF RESPONSIBILITIES (AND OTHER [CERTIFICATES](#))

JAN-JUL 2019 Undergraduate Teaching Assistant, Academic Reinforcement Program, Teaching Assistant for the course MAN-004 Numerical Methods.
2018-19 Developer and WoC Mentor at Mobile Development Group, IIT Roorkee
AUGUST 2017 National Cadet Corps, 3UK NCC IIT Roorkee, India
Successfully gave the Guard of Honour to our Institute's Director on the occasion of Independence Day

REFERENCE:

Dr. Pushparaj Mani Pathak
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Indian Institute of Technology Roorkee
India
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Dr. Ankit Bansal
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