UTKARSH AASHU MISHRA

B.Tech. Mechanical Engineering
UG(III Year I Semester)
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Registration No: B.Tech./ME/17117093/2020

Indian Institute of
Technology
Roorkee

Area of Interest

Robotic Design and Autonomous Mobility, Deep Learning, CFD Mathematical Modelling and Optimization

Education

Year	Degree/Examination	Institution/Board	CGPA/Percentage
2019	B.Tech. 2nd Year	Indian Institute of Technology, Roorkee	*9.044*
2017	Twelfth	Aditya Academy Secondary, Kolkata (CBSE)	*96.8 %*
2015	Tenth	Aditya Academy Secondary, Kolkata (CBSE)	*10.0*

Internships

Research Internship | SPARK , IIT Roorkee   7th May 2019 - 1st Jul 2019
- Monte Carlo and Quasi-Monte Carlo with Importance Sampling on Radiative Heat Transfer was implemented
- Accuracy improvement was studied with Quasi-Monte Carlo schemes and computation problem was optimized through Supervised Learning.

Summer Internship | G3N Associates Ltd., India   20th May 2018 - 21st Jun 2018
- I was involved in developing the company's official website from scratch.
- Works included programming a front-end code with BootStrap integration and back-end code on Node.js, Obtaining a suitable domain and Amazon web-hosting service(AWS-EC2).
- The work is live at www.g3nassociates.com

Projects

IIT Roorkee Motorsports | IIT Roorkee   Jan 2018 - Ongoing
- As a member of the Aerodynamics Subsystem, dedicated to Computational Fluid Analysis and vehicle shape optimization.
- Works include designing, modeling and fabrication of Aerodynamic components like Front and Rear Wings, Diffusers, Nose, Side Pods and ducts. Simulations are performed using Ansys Fluent.
- Enthusiastic about self-driving and vehicle automation with the implementation of various deep learning algorithms and computer vision models.

Modeling and Simulation of Flow around NACA Series Airfoils | IIT Roorkee   Jan 2019 - Apr 2019
- Worked on the implementation of Numerical Methods with Computational Fluid Dynamics to NACA series airfoils.
- Works included turbulence modeling, applying concepts of transition and boundary layer effect and conformal mapping.
- Simulations and calculations were done on Ansys Fluent and MATLAB.

Annual Convocation IITR Android App | IIT Roorkee   Sep 2018 - Oct 2018
- An android App for the graduates of IITR attending that years' convocation ceremony.
- This app helps them access information related to their degrees, details regarding the convocation ceremony, or enjoying the live stream of the event right from the app.
- This app is 4.6 rated and has 500+ downloads on Google Play Store.

Designing, Structural and Thermal Analysis of Clutch Plate | IIT Roorkee   20th Aug 2018 - 5th Nov 2018
- Stress analysis Determination of factor of safety and based on Von-Mises stresses
- Thermal Analysis Temperature distribution on the clutch plate and determination of heat flux
- Contact Surface Analysis Attempt to determine stress distribution the clutch plate due to friction between clutch plate lining and flywheel

Implementation of Monte Carlo Method with Nvidia CUDA computation | IIT Roorkee   Dec 2017 - Mar 2018
- Worked on the implementation of the Direct Simulation Monte-Carlo(DSMC) method in Computational Fluid Dynamics.
- Works included programming on CUDA and optimization of computing time with GPU in comparison to CPU

Game Playing Bot, Shristi(Annual Exhibition) | IIT Roorkee   2018
- Designed and Fabricated a robotic arm devoted to playing pre-programmed hand games.
- Worked with Arduino UNO and Bluetooth module.

Awards / Scholarships / Academic Achievements

- Selected for the SPARK Research Internship Program 2019 by IIT Roorkee, India
- Qualified Joint Entrance Examination, Advanced 2017 (Indian Institute of Technology), with an All India Rank of 2223
- Achieved Merit Certificate in Physical Education in the CBSE AISSCE 2017 (Standard 12)(top 0.1%of examinees)
- Awarded the prestigious KVPY Scholarship (Kishore Vaigyanik Protsahan Yojana), instituted by the Department of Science and Technology, Government of India in-stream SX (2016)

Skills

Computer languages	C++, JAVA, Python, HTML, CSS, JavaScript, ReactJS, Node.js, MATLAB, Grasshopper
Software Packages	Android Studio, Anaconda, Jupyter-Notebook, Jetbrains Webstorm, MATLAB, Visual Studio, Solidworks, Ansys (Design, Meshing, Structural, Thermal, Fluent), OpenFoam, Adobe-Illustrator, LATEX, ROS Package, Rhinoceros 3D Package
Additional Courses Taken	Economics, Marketing Research, Vibrations and Noise
Languages Known	English (SRW) , Hindi (SRW) , Bangla (SRW)

Positions of Responsibility & Extra Curriculars

Aerodynamics Engineer at IIT Roorkee Motorsports   21st Jan 2018 - Current

- I am responsible for the Designing and Optimization of the Aerodynamic components of our Formula SAE Vehicle.

Undergraduate Teaching Assistant, Academic Reinforcement Program, IIT Roorkee   Jan 2019 - Jul 2019

- I was the Teaching Assistant for the course MAN-004 Numerical Methods.
- Works included organizing doubt sessions and helping 1st-year students with the subject.

Developer and WoC Mentor at Mobile Development Group   2018 - 2019

- Executive member of the team responsible for developing of the Annual Convocation App 2018.
- Active involvement in developing mobile apps on the android platform with various features.
- Mentor, participation in guiding 1st Year Students for Winter of Code (WoC)

Himalayan Explorer's Club   2018

- Active member of HEC . Participated in various trekking events.

National Cadet Corps, 3UK NCC IIT Roorkee, India   1st Aug 2017 - 30th Apr 2018

- Successfully gave the Guard of Honour to our Institute's Director on the occasion of Independence Day

References

Dr. Ankit Bansal
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Dr. Ameeya Kumar Nayak
Associate Professor
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