

Vibhor Aggarwal

Master's Student, Automotive Engineering at RWTH Aachen

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ACHIEVEMENT AND AWARDS **Proficiency Medal** for the **best under graduate project** in Mechanical Engineering department of IIT Kanpur in 2017
Ranjan Kumar Memorial Award for the **best socially relevant project** at IIT Kanpur in 2017
Ranked **3rd** in state and 914 nationally **among 1.4 million students** in JEE 2013
Gold Medal in National Mathematics Olympiad conducted by AISMTA, 2013

EDUCATION *M.Sc, Automotive Engineering* Sep, 2018 - Present*
RWTH Aachen, Germany

B.Tech, Major: Mechanical Engineering July 2013 - June 2017
Minor: Applied Mathematics
IIT Kanpur, India

Intermediate, Central Board of Secondary Education May 2013
Army Public School, Dehradun, India

Matric, Central Board of Secondary Education May 2011
St. Mary's Convent School, Dehradun, India

EXPERIENCE *Research Fellow, Dynamic Interaction Control* Nov 2017 - Aug 2018
Supervisor: Dr. Daniele Pucci, Italian Institute of Technology, Genova, Italy

- Defining and identifying the **transfer function** between the voltage applied to the motors and the torque of each joint of the humanoid robot iCub
- Implement the low level torque control framework on the joints of iCub using the identified transfer function

Graduate Engineer Trainee July 2017 - Oct 2017
Hero Motocorp Ltd, Haridwar, India

- Managed **Total productive Maintenance** for machinery equipment and quality related activities and completing operations pertaining to maintenance repair involving resource planning and in-process inspection
- Produced machined parts by programming, setting up, and operating a computer numerical control (CNC) machine; maintaining quality and safety standards

Intern, Mechanical Design Engineer May 2016 - July 2016
Grey Orange Robotics Pte. Ltd, Gurugram, India

- Worked on the Suspension system of a robot, which is a bi-directionally scalable material handling system for goods to man
- Optimized the assembly through introduction of trailing link in the Suspension system, and reduced the number of parts
- Studied the designing of structural features and material choice for the casting of Aluminum parts

ACADEMIC PROJECTS

Robotic Exoskeleton Arm
Supervisor: Dr. Sumit Basu, IIT Kanpur

Aug 2016 - April 2017

- **Exoskeleton arm** that increases mobility and is easily controlled by voice using an Android app, Bluetooth module and arduino.
- Actuated using **Pneumatic Air Muscles**(PAM) made of Latex material, used as a woven shell and Polyethylene Terephthalate, used for loose weave working on the principle of proportional pressure pneumatics
- Simulated the non-linear model on Ansys, and tested it experimentally
- Structure of the project is made completely of Glass Fibre Reinforced Plastic resulting
- Helps people affected from **Cerebral Palsy** and old age arm weakness

Multiple Crop Planting Machine
Guide: Dr. V.K Jain, IIT Kanpur

Jan 2015 - April 2015

- Worked in a team of 7 members to design and fabricate a working model of crop planting machine
- Simulated the machine on Solidworks and Ansys, for functionality

CO-SCHOLASTIC PROJECT

Design and fabrication of two off-road vehicles
Supervisor: Dr. Avinash Kumar Agarwal, IIT Kanpur

Dec 2013 - Jan 2016

- Calculated and optimized the Suspension parameters for the vehicle on Lotus Suspension Simulation
- Designed the front hub of the vehicle on Solidworks and did its FEA and weight optimization on Ansys
- Developed a Mathematical model on MATLAB for the vehicle's Suspension system to calculate forces
- The project was awarded 4th position for its design among 44 national teams

TECHNICAL SKILLS

MATLAB, Solidworks, Ansys, Autodesk Inventor, Lotus Suspension Analysis, Abaqus FEA, C language

RELEVANT COURSES

Design for Manufacturing and Assembly
Solar Energy Technology
Mechanics of Solids
Theory of Mechanisms and machine
Organizational and administrative psychology
Mathematical Methods

Fracture and Fatigue
Design of Machine Elements
Additive Manufacturing
Finite Element Methods
Mathematical Modelling
Vibration and Control

POSITIONS HELD

Team Captain
BAJA SAE, Motorsports team of IIT Kanpur

April, 2015 - Jan, 2016

- Spearheaded a team of 25 members in design and fabrication of an All-terrain vehicle for Baja Student India 2016
- Laid the groundwork for IITK Motorsports to acquire the recognition of an institute team from 2016
- Contacted firms like Bosch, Fox suspensions, Wilwoods, Dassault Systems etc. thereby raising sponsorship

Student Guide
Counselling service, IIT Kanpur

July, 2014 - April, 2015

- Mentored 6 freshmen of the batch 2014 in their smooth transition to life at IIT Kanpur
- Worked in a 130+ member, three-tier team to conduct various events throughout the year 2014-2015