

# Vibhor Aggarwal

Master's Student, Automotive Engineering at RWTH Aachen

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Aachen, Germany

**ACHIEVEMENT AND AWARDS** **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

**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

<b>ACADEMIC PROJECTS</b>	<i>Robotic Exoskeleton Arm</i>	Aug 2016 - April 2017
	Supervisor: Dr. Sumit Basu, IIT Kanpur, India	
	<ul style="list-style-type: none"> <li>• <b>Exoskeleton arm</b> that increases mobility and is easily controlled by voice using an Android app, Bluetooth module and arduino.</li> <li>• Actuated using <b>Pneumatic Air Muscles</b>(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</li> <li>• Simulated the non-linear model on Ansys, and tested it experimentally</li> <li>• Helps people affected from <b>Cerebral Palsy</b> and old age arm weakness</li> </ul>	
	<i>Multiple Crop Planting Machine</i>	Jan 2015 - April 2015
	Guide: Dr. V.K Jain, IIT Kanpur, India	
	<ul style="list-style-type: none"> <li>• Worked in a team of 7 members to design and fabricate a working model of crop planting machine</li> <li>• Simulated the machine on Solidworks and Ansys, for functionality</li> </ul>	
<b>CO-SCHOLASTIC PROJECT</b>	<i>Design and fabrication of two off-road vehicles</i>	Dec 2013 - Jan 2016
	Supervisor: Dr. Avinash Kumar Agarwal, IIT Kanpur	
	<ul style="list-style-type: none"> <li>• Calculated and optimized the Suspension parameters for the vehicle on Lotus Suspension Simulation</li> <li>• Developed a Mathematical model on MATLAB for the vehicle's Suspension system to calculate forces</li> <li>• The project was awarded 4th position for its design among 44 national teams</li> </ul>	
<b>TECHNICAL SKILLS</b>	MATLAB,Solidworks,Ansys,Autodesk Inventor, Lotus Suspension Analysis, Abaqus FEA, C language	
<b>RELEVANT COURSES</b>	Design for Manufacturing and Assembly	Fracture and Fatigue
	Solar Energy Technology	Design of Machine Elements
	Mechanics of Solids	Additive Manufacturing
	Theory of Mechanisms and machine	Finite Element Methods
	Organizational and administrative psychology	Mathematical Modelling
	Mathematical Methods	Vibration and Control
<b>POSITIONS HELD</b>	<i>Team Captain</i>	April, 2015 - Jan, 2016
	BAJA SAE, Motorsports team of IIT Kanpur	
	<ul style="list-style-type: none"> <li>• Spearheaded a team of 25 members in design and fabrication of an All-terrain vehicle for Baja Student India 2016</li> <li>• Laid the groundwork for IITK Motorsports to acquire the recognition of an institute team from 2016</li> <li>• Contacted firms like Bosch, Fox suspensions, Wilwoods, Dassault Systems etc. thereby raising sponsorship</li> </ul>	
	<i>Student Guide</i>	July, 2014 - April, 2015
	Counselling service, IIT Kanpur	
	<ul style="list-style-type: none"> <li>• Mentored 6 freshmen of the batch 2014 in their smooth transition to life at IIT Kanpur</li> <li>• Worked in a 130+ member, three-tier team to conduct various events throughout the year 2014-2015</li> </ul>	