LETTER OF INTENT

I grew up feeling fascinated by things that improves the way we perform the job at hand. Continuously solving real life problems and playing with the mechanical advantages of the objects is what motivates and drives me forward.

I started making robots while I was a freshman at college. I made robots that ranged from gripping to amphibian to the Battle-bot kind of robots. I was interested to learn about the art of machines. After serving a stint with the robots, I got an opportunity to work on the vehicular dynamics with **college's Motorsports** team, which I eventually led, as the **captain**. It was then; I felt there is something that I cherish about dynamics of machines. We made two **off-road vehicles** in two successive years. I was involved in calculation of the Suspension and the steering parameters, their design and modeling on ***Lotus Suspension Simulation*** software and doing its Finite Element Analysis on **Ansys**.

Soon forth, I got an opportunity to work with an organization that worked on **robotic systems for warehouses' automation**, wherein my task included working on robot's dynamics and designing a new suspension design, which adhered to Design for Manufacturing and Assembly guidelines and thus, was easy to manufacture and assemble.

It was not until I worked on my undergraduate project that I decided that I would like to study more on the Robotic systems. I worked under the supervision of **Prof. Sumit Basu** from the Mechanical Engineering department of **Indian Institute of Technology Kanpur** who guided me in the project, which was a **"Robotic Exoskeleton Arm"**. The research project aimed to bio-mimic human muscles using a flexible material like latex, restricting it axially, using Polyethylene Terephthalate based flexo and controlling it using voice commands via an Android application and an Arduino system, connected using Bluetooth module. The Exoskeleton arm could help patients suffering from Cerebral Palsy in the physiotherapy of their limbs and can help strengthen limb's mobility, giving supportive strength to old age people. The project helped me to get a final stint of robotics before leaving the college. The academic senate recognized the project. I ended up receiving **two awards** at the convocation ceremony viz **"Ranjan Kumar Memorial award"** for the **best socially relevant project** by student of any department from the class of 2017, IIT Kanpur and **"The Proficiency medal"** for the **best undergraduate project** work done by any student in Mechanical Engineering department from the class of 2017, IIT Kanpur.

As a fresh graduate, I worked in the **Engine Plant Maintenance** department of **Hero MotoCorp Ltd**. I managed the **Total Productive Maintenance** for machinery equipment and quality related activities and completed operations pertaining to maintenance repair concerning resource planning and in-process inspection.

I am currently working as a research fellow under **Dr. Daniele Pucci** at the ***Istituto Italiano di Tecnologia*, Genova, Italy**. I am working on the **humanoid robot**,**iCub**, with major task to define and identify the **discrete time transfer function** between the voltage applied and the torque acting on each joint of the humanoid robot iCub. Thereby, creating a computational framework that will be effective in **torque control** of the joints of iCub using the parameters like position, velocity and pre measured torques on the joints.

I am interested in the M.Sc. degree program on **Robotic Systems Engineering** of **RWTH Aachen. S**tudying and working with highly talented and enthusiastic people involved in the field of robotics would help me grow both professionally and technically. Moreover, during the program I would get the opportunity to interact with one of the best Faculty for Robotic Systems in the world.

In future, I want to work on the robots that are not just capable of working in environment independent of the humans but will also able to collaborate with humans in complex task. For which, I believe, the program can serve me with the right knowledge, tools and facility.