



Ranjeet Singh Banthiya
Metallurgical Engineering & Material Science
Indian Institute of Technology, Bombay
Specialization: Ceramics & Composites

09D11025
UG Third Year(Dual Degree)
Male
DOB: 07-08-1991

| Examination | University | Institute | Year | CPI / % |
|-----------------|--|---|------|---------|
| Graduation | IIT Bombay | IIT Bombay | 2012 | 6.27 |
| Intermediate/+2 | Board of Secondary Education,Rajasthan | M.B.Public School,Talwandi,Kota,Rajasthan | 2008 | 76.62 |
| Matriculation | Central Board of Secondary Education | Akalank Public School,Kota,Rajasthan | 2006 | 86.60 |

Internships and Academic Projects:

- **ThinkLABS Technosolutions Pvt. Ltd.**
 - Successfully built various robots namely line follower, obstacle avoider, laptop controlled car and self parking car using Atmega 16 Microcontroller
 - Gained hands-on experience on new technology and developed practical skills of working on Robotics, Embedded C and Linux
- **Ideaforge Pvt. Ltd, SINE IIT Bombay**
 - Developed a model 2 stroke IC engine based generator for charging an on-flight battery which could be used for emergency landing of an unmanned air vehicle
 - Designed an assembly for engine and generator that optimized best ratio for maximum output in terms of electrical energy for a given amount of fuel
- **Captech Engineers Mumbai, India**
 - Converted a manual capsule powder-feeding machine into a fully autonomous system resulting in an increase in its efficiency
 - Simulated the mechanism via CAD model on the Solidworks platform to complete the task
 - Implemented the above design on a prototype showing the possible modifications in present machine
- **Mini National UID for IIT Campus:**
 - Developed firmware to detect and identify fingerprints of all the campus inmates for their biometric attendance which is currently deployed for the first year students
 - Analyzed the number of people boarding the transport buses so as to determine the best possible routes
- **Mexus Education Pvt. Ltd., Mumbai, India:**
 - Developed small legged robots with LEGO kits to be used for mass production.
 - Designed a robotics course product for kids to be implemented in all major cities in India and abroad.

Robotics Projects:

AUVSI-RoboSub – World's biggest underwater AUV competition (ongoing project) Guide: *Prof. Hemant Arya*

- Co-founder of the Institute's first underwater AUV team, aimed at participating in RoboSub competition organised by **Association for Unmanned Vehicle Systems International, California.**
- Serving as the development head of mechanical systems and various control related sub systems.
- Simulated structural and fluent analysis on Ansys of the CAD model prepared on SolidWorks for design optimization.

ROBOCON - Asia's biggest student level robotics competition

Guide: *Prof. C. Amarnath*
[Sept.2010 – March2011]

- **Robocon Thailand 2011**
 - Co-founded the Institute's **only student funded** Robocon team, the first ever in IITB
 - Played a pivotal role in Designing one manual and four autonomous machines which had to perform certain pick and place task
 - Designed and simulated CAD model of the designs and analyzed the working of machines
 - Responsible for the **developmental and performance testing** of the robots and mechanical manipulators, custom pulleys and self made linear motion slide bars
 - **Finalist** at national level; awarded with the Best Autonomous Design and Most Innovative Design

- **Techfest 2010**(IIT Bombay's Annual Technical Festival) [Dec 2009-Jan 2010]
 - Engineered a machine consisting of two parts, one of them was to act like a bridge and another was required to be a wirelessly controlled car; which had to traverse on the bridge
 - Developed a unique combination of linear and rotational motion in bridge which helped us getting the lowest time to complete the track
- **Roboliga2010** (Robotics competition conducted by 'Think LABS Pvt. Ltd.' at National level) [June 2010]
Guide: Prof. C. Amaranth
 - Developed an autonomous maze solver robot at league level and one autonomous and one manual robot to play a game of snake and ladder
 - Implemented 802.15.4CC for wireless communication between autonomous robot and an external laptop
 - Claimed **1st** position and awarded by **BEST INDIGENIOUS DESIGN** of manual robot
 - Used various sensors to perform tasks like line following, proximity measurement, color detection
- **Hexapod** [May-June 2010]
 - Designed and built a Hexapod using a modified version of Theo Jansen Leg mechanism
 - Implemented various tasks such as line following, obstacle avoider and wall follower on an AVR platform

| Software skills | |
|-----------------|--|
| Software | Ansys, SolidWorks, AutoCAD, Eagle, Cross compiling/Tool chain setup |
| Electrical | Analog/digital and Power System design/interfacing/integration, Microcontroller application, PCB Design, embedded buses/networking (CAN, I2C, Zigbee etc.) |
| Mechanical | Metalworking/Machining, Lathe, Welding, Woodworking, CNC Mill, and other fabrication |

Position of Responsibility:

- **Technic Core Group Member:**
 - Technic is the technical club of IIT Bombay consisting of ten core group members responsible for all technical activities of institute which includes 14 hostels and more than 5000 students
 - Organized and conducted various competitions and workshops based on robotics and structure designing in the institute, also conducted a session of Solid Works at Institute Level
 - Designed a prototype of a Humanoid Robot for freshmen orientation for Technic Club
 - Conceptualized a moving bridge assembly for F1 car competition organized by Technic for freshmen
- **Mentor Technic**
 - Mentored 20 students for various technical events inside institute
 - Motive of fostering their talent to participate in bigger projects

Technical Awards and Achievements:

- Acclaimed with **Special Mention** in Technical Activities at Institute Level twice for excellence and overwhelming contribution in technical activities
- Special Mention in Technical Activities at Hostel level
- 3rd position in Mind over Matter-Online Quiz, held by Material Science department of IIT Bombay

Extracurricular Activities:

- Participated in Street Play in “**Malhar**” conducted by St. Xavier's College in Mumbai
- Built a rotating assembly for a 5-meter tall idol and water harvesting system for Performing Arts Festival