## SCHOLASTIC ACHIEVEMENTS

- Representing **India** in **All Asia Science Olympiad 2012** in engineering sciences to be held in **Pakistan**
- Stood amongst **top 50 students** in Indian National Physics Olympiad '09
- **Fellow of CBSE Merit Scholarship** for Professional Studies '09 awarded by Government of India
- Secured **International Rank 65** in International Mathematics Olympiad '09
- Secured **All India Rank 15** in level 1 and **All India Rank 46** in level 2 of National Science Olympiad '09

## KEY TECHNICAL ACTIVITIES

**AUVSI Foundation and U.S. Office of Naval Research** (Oct'11-Present)
*International Robosub Competition, California, USA*

- Designing the mechanical sub-system of **Autonomous Underwater Vehicle (AUV)** comprising of custom made vehicle frame, hull, external enclosures and actuators
- Designed all the modules in **CAD software** aided with simulation check; performed detailed **Finite Element Analysis (FEA)** of the assembly and components to ensure reliability of structure
- Fabricating the AUV using **CNC part milling** and **turning processes** with special customized materials

**Society Of Automotive Engineers,** *Super-Mileage Vehicle* (May'11-Present)
*Fuel Efficiency Racing Challenge, Michigan USA*

- Designed an **automobile weighing 60kgs** comprising of **specifically fabricated fairing and roll bar**
- Incorporated Planetary CVT transmission, **first of its kind in automotive technology**, offering continuous transition to any gear ratio within its range and thus increasing **powertrain efficiency to 97%**
- **Overall Fuel Economy** is expected to reach **350 Miles per gallon**

**Doordarshan***, National Robocon* (Jul'10-Mar'11)
*Asia's largest technical robotics competition for Undergraduates*

- Engineered 2 autonomous robots and 1 manual robot, each weighing about **15 kg** and **1m$^3$** in volume
- Performed **3D CAD modeling** and **modal analysis** of the machines using **SolidWorks and Ansys** packages to ensure cost reduction and quality improvement
- Competed with top 60 colleges including all IIT's; matches **telecasted live** on national television
- Secured a place on the podium consecutively for 2 years - **4$^{th}$ in 2010** and **2$^{nd}$ in 2011**; received the **award** of **Best Autonomous Robot** and **Best Innovative Design**

## MAJOR RESEARCH PROJECTS

**Federal University of Rio De Janerio,** Brazil (Dec'11-Present)
*Optimization of eddy current transducer for detection of stress corrosion cracking*

- **Enhancing product life time** of Duplex Stainless Steels (DSS) by reducing sigma phase precipitation on welded joints, thereby **reducing stress corrosion cracking**
- Optimizing performance of eddy current transducers using simulation in **COMSOL Multiphysics in Matlab**
- Analyzing around **120 configurations** to optimize the design considerations of transducer

**De-Burring Microholes Using Electrical Discharge Machining** (May'11-Present)

- Analyzed the process parameters and techniques till date used on this newly developed method and **optimized the voltage, current drain and spark intensity**
- Developed and applied a sequential model for effective elimination of micro-burrs with **95% efficiency**
- Designed **novel CNC path optimization** algorithms and **reduced** the **service routine time by 40%**

## KEY ACADEMIC PROJECTS

**Regenerative Autosuction Fountain** (Jan'11-Mar'11)

- Designed a scale 10 model of fountain which **works iteratively** for **10 minutes without energy supply**
- Implemented the technique of autosuction to increase system's efficiency by **~5 times** over existing models

**Modeling of Ring Rolling Process** (Jul'11-Nov'11)

- Developed a **mathematical model** of the process using skip line analysis estimating roll force and torque
- Performed **FE Analysis** of the model using **DEFORM 3D** utilizing hybrid mesh elements to improve computational accuracy; selected re-meshing strategy to reduce element distortion

**Compass Gradient Edge Detector** (Oct'11-Nov'11)

- Developed an algorithm in C++ to detect edges of image upto **90% accuracy** in low lighting conditions
- Implemented the technique to develop an **application for determining** the **areas under vegetation** and its rate of depletion in nearby areas

## TECHNICAL PROJECTS

**Magnetic Actuator** (Jul'10-Mar'11)

- **Innovated** a compact magnetic actuator having **ZERO backlash** using neo-magnets coupled with iron bars
- This development can be used to **replace the traditional actuators** in machines and robotic mechanisms
- System developed **can be coupled with any motor or pressure device**

**Electricity Generation Using Animal Power** (Jun'11-Present)

- Designing a transmission system using **animal power** to generate an estimated **2KW electricity per hour**
- Flexure mechanisms enable achieving **high efficiencies** close to **85%**

## AWARDS

- Acclaimed with **Institute Special Mention (20 out of 5500)** for excellence in technical activities
- Received **Hostel Technical Colour** and **Hostel Special Mention** for revitalizing hostel technical scene

## POSITION OF RESPONSIBILITY

**Senior Member**, **National Robocon** (Jul'10-Mar'11)

***Supervised a team of 18 students*** *to* ***2nd position*** *among 60 colleges at India's largest robotics Competition*

- Supervised the **designing, fabrication and testing** of 2 autonomous robots and 1 manual robot; deriving techniques and mechanisms from over **8 prototype designs**
- Carved out a budget of **INR 500,000** to engineer the machines that could work in co-operation to **efficiently complete** the specified task in stipulated time
- Directed overall strategy to accomplish the **fabrication well in advance** leaving ample time for **testing**

**Young Editor**, **Times Of India** (Jun'06-Apr'07)

*Aimed at elevating the standards of young* ***journalism*** *and* ***readership***

- Selected from a chunk of **2500 students** from all over Mumbai and collaborated with a team of 24 core group members headed by **TIMES Chief Editor**
- Collaborated with **150 schools** in Mumbai for distribution and co-authored **40 literary sections**

**Technical Activities Secretary**, **Hostel 3** (Jul'10-Apr'11)

- Introduced the concept **Technical Mentorship for the first ever time** in a hostel
- Led a team of **16 Tech Mentors** to guide **250 freshmen** towards fostering their interest in technical activities

## EXTRA CURRICULAR ACTIVITIES & INTERESTS

- **Winner**, Cadbury Bournvita Quiz Contest **(BQC)**
- Built an autonomous robot in Nexus, Techfest which could **grip and lift load** with **just a single actuation**
- Made a 10 ft by 5 ft model of a missile having 2 degrees of freedom in Performing Arts Festival, IIT Bombay
- Special Interest in **History and Philosophy**