
DHRUV GUPTA

Undergraduate, Department of Chemical Engineering
Indian Institute of Technology-Bombay, Mumbai 400 076, INDIA
Email: gupta.dhruv@iitb.ac.in

EDUCATION

B.Tech, Chemical Engineering

07/2009- present

Indian Institute of Technology-Bombay, India (CGPA 9.04)

CBSE

Grade 12th, The Mother's Intl. School, New Delhi, India (93%)

03/2009

Grade 10th, Delhi Public School, Hardwar(90.2%)

03/2007

RESEARCH EXPERIENCE

☐ **Data based modeling and Safe Parking Operation**

Guide-Dr. Prashant Mhaskar, McMaster University, Canada

05/2012 to Ongoing

Industry Partner-Praxair Hydrogen Manufacturing Facility

- Work done as part of **MITACS Globalinks fellowship** 2012
- Data generation using Honeywell UniSim[®] simulator
- *Partial least square regression* and *fuzzy-c-clustering* for building piece wise affine model
- System Identification using AutoRegressive Exogenous modeling
- Model Predictive Control for safe parking of plant during faults

☐ **National Solar Thermal Power Testing, Simulation and Research Facility**

Guide-Dr. Mani Bhushan, IIT-Bombay, India

05/2011 to 11/2011

- Received the **Undergraduate Research Award** for the work
- Modeling and Simulation of dynamic response of various unit operations
- Solved coupled PDEs of the model using *Orthogonal Collocation on Finite Elements*
- Applied Extended, Unscented *Kalman Filters* and particle filters for states and parameter *estimation* on the stochastic differential equations for fault detection and diagnosis
- Comprehended results through limiting physical cases, sensitivity analysis etc.

☐ **Pratham : IIT Bombay Student Satellite Initiative**

Cross Department Project in IIT-B and Indian Space Research Organisation 04/2010 to 08/2010

- Member of the Communications and Payload Subsystem
- Cube-sat with Total Electron Count of Ionosphere as payload to be launched in December 2012
- Designing and building the Ground Station for Telemetry and Tele-command of the satellite
- Worked in collaboration with IPGP(Institut de Physique du Globe de Paris) for application of the payload data to industry

☐ **Microreactor Sensors for Biomedical Applications**(Course project)

Guide-Dr. Rohit Srivastava, Dept. of Biosciences, IIT-B

01/2011 to 04/2011

- Literature survey-Various chemical sensing techniques, optimizing power and space requirements of transport equipment like micropumps, valves, filters, tubings etc. in the device
- Designing, system engineering, and developing testing scheme for development of chemical sensor module at micro scale

CONFERENCES

☐ Bromley Lecture Series, University of Ottawa, Canada

05/2012

- Presented on Science Technology Innovation Policy of India
- Panelist representing India among 12 participating countries
- Guided by Dr. Chidambaram, Principal Scientific Advisor to Prime Minister of India

ACCOLADES

- The *Undergraduate Research Award* at IIT-Bombay 2012
- **MITACS Globalinks** fellowship for research at McMaster University, Canada 2012
- Secured **AIR 895** in Joint Entrance Exam (IIT-JEE) amongst 380 thousand candidates 2009
- National Talent Search Scholarship(NTSE) by National Council of Education and Research Training (NCERT) 2011
- Honorary Mention at Gandhian Innovation Award ceremony at *IIM-Ahmedabad* for work on “Academic Social Mobilization” 03/2012
- *Keep the Himalayas Clean Award* at Atal Bihari Vajpayee School of Mountaineering and Allied Sports, Manali, India for exemplary leadership qualities as the Expedition leader and for spreading awareness on mountaineering and environmental ethics 05/2011

COURSES

Core Courses:

- Thermodynamics
- Heat and Mass Transfer
- Transport Phenomena
- Chemical Reaction Engineering
- Process Fluid Mechanics
- Mass Transfer Operations
- Numerical Analysis
- Solid Mechanics
- Electrical & Electronic Circuits
- Molecular Cell Biology
- Material Sciences
- Complex Analysis

Additional Courses:

- Steam and Gas Turbines
- State-Estimation
- Probability and Statistics
- Biomedical Microsystems
- Product Development and Research

POSITIONS

- Institute Engineering Mentorship Program: **Head & Overall Coordinator** 05/2011-04/2012
 - Offer a conducive environment to inculcate positive attitudes and values amongst the students where they can stay focused on their respective goals and feel motivated and encouraged
 - Endeavors to enable clarity of thought and focus to help the students achieve their cherished desires by making them being more responsible for themselves
 - Engaging students in intellectual group discussions spanning from abstract mathematics to Technology, Business Innovation, Societal and political understanding
 - Channel of constructive interaction between senior and junior students
- Institute Academic Council 04/2011-03/2012
 - Member of the **Student Advisory Board**, IIT-B
 - Handling institute-wide course registrations for all the students
 - Conducting sessions on research prospects and projects for undergraduates
- Mountaineering course, Ministry of Defence, India: **Expedition Leader** 05/2011
 - Led 65 people through 26 days of rigorous training course on mountaineering in the inhabitable conditions of lower Himalayas near Manali, India
 - Awarded “Keep the Himalayas Clean” badge for leadership, mental endurance, self-discipline and educating people on mountaineering and environmental ethical values

SPORTS

- Successfully completed *Swimmathon*, the annual *survival swimming competition* by continuously swimming for 12 hours covering a distance of 21.5 Km 2010
- *Gold medal* in Inter-Hostel water-polo general championship 2011
- Secured 3rd position in Triathlon (Cycling, Running, Swimming) in IIT-B 2010
- Special Appreciation for actively contributing and encouraging sports in student hostel 2011