



Gautam Agrawal
Electrical Engineering
Indian Institute of Technology, Bombay

08007008
B.Tech.
Male
DOB: 3rd March 1990

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2012	8.96
Intermediate/+2	CBSE	K V Mankhurd	2008	94.40
Matriculation	CBSE	K V Mankhurd	2006	90.40

SCHOLASTIC ACHIEVEMENTS

- Awarded the **DAAD-WISE scholarship** for a summer research internship at ISFH, Germany (2011)
- Awarded **Silver Medal** at International Chemistry Olympiad held in Budapest, Hungary (2008)
- Secured **All India Rank 1** in National Cyber Olympiad (2008)
- Placed in **top 1%** out of 35,000 students in National Physics Olympiad (2008)
- Secured **All India Rank 158** in IIT-JEE 2008 out of over 3,20,000 students (2008)
- Secured **State Rank 23** and All India Rank 317 in AIEEE 2008 out of over 8,00,000 students (2008)
- Adjudged **Best Student** of School for overall academic and extra-curricular performance (2008)
- Awarded Certificate of Merit in Green Olympiad conducted by TERI, India (2004 & 2005)

PROJECTS IN MICRO-ELECTRONICS AND RENEWABLE ENERGY

B. Tech. Project: Si-Nanowire Array Optoelectronic Diodes (Guide: Prof. Anil K.G.) (Aug '11 - Present)

- Designed a model to study **optical absorption characteristics** of various Si-nanowire array layouts
- Analyzed effect of varying wire spacing, radius, length & radiation wavelength using Sentaurus TCAD
- Aim is to optimize physical and electrical parameters for use in photo-detectors and solar cells

Internship Project: Conductive Boundary Solar Cell Simulation Software – CoBoGUI (May '11 - Jul '11)

Guide: Dr. Thorsten Dullweber, Institut für Solarenergieforschung Hameln (ISFH), Germany

- Extended the CoBoGUI software functionality for various solar cell geometries in 2D and 3D
- Configured solver for Back Contact Back Junction & point contact Passivated Emitter and Rear Cells
- Achieved major improvements in agreement with real device physics versus earlier 1D & 2D models

Simulation of Crystalline Silicon Solar Cells (Guide: Prof. Anil K.G., EE, IIT-B) (May '10 - Jul '10)

- Developed solar cell models with and without **surface texturing** for comparison of cell parameters
- Attained an improvement in efficiency from **12%** to **17%** with surface texturing in Sentaurus TCAD

Energy Management Projects

- Compared **Life Cycle Cost & Emissions** of LED vs. T8 tubelights for various lighting needs in Hostel 8
- Determined the relative share of electricity consumption of various equipments in IITB printing press
- Analyzed the past, present and future trends in wind turbine manufacturing market

PROJECTS IN ROBOTICS AND ELECTRONIC DESIGN

Autonomous Grid Navigating Swarm Robots, Techfest '10 (May '09 - Jan '10)

- Designed 2 bots that coordinate to move randomly placed blocks to required locations in least time
- Qualified for the **Finals** of the competition; only team from IITB & one of 6 teams from India to do so

Amphibious ATV Robot, Techfest '09 (Oct '08 - Jan '09)

- Designed a 8-channel wireless remote controlled amphibious All Terrain Vehicle robot
- Implemented a differential steering mechanism using 4 wheels with paddles and 2 propellers

Multi-Drop Telephony System (Guide: Prof. P. C. Pandey, EE, IIT-B) (Jan '11 - Apr '11)

- Designed a distributed system having features of **intercom, call transfer & remote control of devices**
- The implemented system had 1/4th the cost of conventional electronic exchange systems

Frequency Counter & Duty Cycle Measuring Circuit (Guide: Prof. M.B. Patil, EE, IIT-B) (Feb '10 - Apr '10)

- Designed and implemented a circuit to measure frequency and duty cycle of square waves
- Measured frequencies up to 100kHz with a response time of less than 2 seconds

MATH AND CODING PROJECTS

Intelligent Trading System (Guide: Prof. V.M. Gadre, EE, IIT-B) (Jan '10 - Apr '10)

- Analyzed & predicted future price movements in financial markets using signal processing concepts
- Implemented **trend** and **cycle indicators** in C++ to give buy/sell signals for maximizing profit
- Tested the model with data from National Stock Exchange and realized an average **profit of 15% p.a.**

Electrical Circuit Solver (Guide: Prof. A. Ranade, CSE, IIT-B) (Jul '08 - Nov '08)

- Implemented nodal analysis and Gaussian elimination to solve DC resistive and AC RLC networks
- Developed a simple Graphical User Interface for designing the circuit and viewing results

MINOR IN ENERGY SCIENCE AND ENGINEERING: 'AA' in All Completed Courses

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|---|--|
| • Introduction to Renewable Energy Technologies | • Energy Management |
| • Energy Resources, Economics & Environment | • Solar Photovoltaics Fundamentals |
| • Conservation of Energy in Buildings (ongoing) | • Advanced Concepts in Solar Cells (ongoing) |

EXTRA CURRICULARS: Robotics, Social Work, Quizzing & Languages

- Awarded **"Best Design Prize"** in wireless remote controlled robotic car racing competition organized by Technic, Technical Club of IIT Bombay in 2008
- Taught a group of 10 underprivileged students for 1 year for 3 hours a week at Campus School, IIT-B
- Awarded **2nd position** amongst the students of 800 schools in KVS National Science Quiz 2007
- Secured **1st position** amongst the students of 50 schools in Metals and Materials Quiz 2007 conducted by Indian Institute of Metals, Mumbai Chapter
- Learning the **German** language at IITB

POSITIONS OF RESPONSIBILITY

Hostel Mess Councilor (Apr '10 - Apr '11)

- Awarded **Hostel Organizational Colour** for outstanding service to the hostel during the tenure
- Managed a team of 2 secretaries and 26 mess workers and oversaw a budget over INR 50,00,000
- Introduced **mess card system** to improve functioning of mess and eliminate unauthorized use
- System achieved 5% savings, availability of all menu items to all & improved cleanliness of utensils
- Organized online mess referendums which quadrupled hostel participation in mess referendums

Hostel Mess Secretary (Aug '09 - Apr '10)

- Introduced extra items for vegetarians & non-vegetarians like McDonalds Burgers & KFC Chicken
- Initiated a takeaway system in breakfast for students in a rush & a two-week menu for more variety

Coordinator of Mood Indigo 2009 (Asia's Largest College Cultural Festival) (Mar '09 - Dec '09)

- Co-conceptualized the "Art Arena" consisting of 6 workshops, 6 exhibitions & 3 interactive sessions
- Lead Coordinator of 3 workshops; coordinated with the respective artists, participants & volunteers