Shubham Goel

Computer Science & Engineering

Indian Institute of Technology Bombay

140050086

UG Second Year

Male

DOB: 02-09-1996

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2016	10.00
Intermediate/+2	CBSE	SGGS Collegiate Public School	2014	96.80
Matriculation	CBSE	Bhavan Vidyalaya	2012	10.00

Homepage	http://www.cse.iitb.ac.in/~shubham.g
Auxiliary Degree	Pursuing Minor in Applied Statistics and Informatics

SCHOLASTIC ACHIEVEMENTS

- **Ranked 1st** in IIT Bombay   *Presently*
- Secured **All India Rank 6** in IIT JEE Advanced   *2014*
- Secured **All India Rank 50** in IIT JEE Mains among over 1.3 million candidates   *2014*
- Awarded **AP Grade** for exceptional performance in **Enginering Drawing** and **Biology** courses *2014-15*

OLYMPIADS

- **Silver Medalist** at the **46th International Chemistry Olympiad** (IChO), Hanoi, Vietnam   *2014*
- Awarded certificates of appreciation for exceptional performance at 46th IChO, Vietnam by:
  - Secretary, Ministry of Human Resource Development, *Govt. of India*   *2014*
  - Chairman, Central Board for Secondary Education, New Delhi   *2014*
- **Best Theorist and Experimentalist** at the OCSC (Orientation cum Selection Camp) for IChO   *2014*
- Cleared the **Indian National Astronomy Olympiad**; was amongst top 39 students   *2014*
- Amongst top 1% in National Standard Examinations in Physics and Chemistry   *2014*
- Received the Hauz Khas **Best Solution Award** at the OCSC for the 54th IMO, Colombia   *2013*

SCHOLARSHIPS

- Recieved the **Institute Academic Award**, IIT Bombay for exceptional academic performance   *2015*
- Awarded by the **Govt. of Harayana** and **Infosys Foundation** for performing at the 46th IChO *2014*
- Awarded the **KVPY** (Kishore Vaigyanik Protsahan Yojna) Fellowship by Govt. of India   *2013*
- Awarded the **NTSE** (National Talent Search Examination) Scholarship by N.C.E.R.T. New Delhi   *2010*

KEY PROJECTS

Nodal Domains of Eigenfunctions of Quantum Billiards

Dr. Sudhir Jain, Bhabha Atomic Research Centre   *Present*

- Numerically solving the **Helmholtz Equation** using the Finite Element Method (**FEM**) and the Method of Fundamental Solutions (**MFS**) for the 60-120° rhombus using C++ and MATLAB
- Calculated number of nodal domains for eigenfunctions using the **Hoshen-Kopelman Algorithm**
- Deriving Recurrence Relations over calculated number of nodal domains for different eigenvalues

Rube Goldberg Machine

Prof. Sharat Chandan, CSE Dept, IIT Bombay   *Present*

- Developing a Rube Goldberg machine in C++ using the **Box2D** physics simulation engine
- Modelling and simulating **perpetual machines** like Somerset's and Da Vinci's machines
- Implementing features like dynamic frame rate, gravity modification and physical components like springs, pendulum, pulleys and water drops

Sustenance

code.fun.do Finalists Forum, Microsoft Academia Accelerator   *Summer 2015*

- Finished in the **top 5 winners** from amongst 53 teams across 15 colleges in India
- Developed a Universal Windows App in C Sharp and XAML which simulated a Food Web to highlight the role played by different species in the environment
- Implemented **Data Structures** for different species, potions and industries and changed population of species through Differential Equations in real time

SuBa Dots

code.fun.do Hackathon, Microsoft Academia Accelerator *January 2015*
- Institute **Runner up** in a 24 hour Hackathon organised by **Microsoft** at IIT Bombay
- Developed a Windows Store App using C Sharp and XAML, designed to run on Windows 8.1
- Built a modified version of the classic **Dots game** by designing a **Cairo Tiled Pentagonal Web** and implementing Brute Force Algorithms to check for completed pentagons

Digital Image Processing

Prof. Deepak B. Phatak and Prof. Supratik Chakraborty, CSE Dept, IIT Bombay *Autumn 2014*
- Developed a Bitmap Image Editor using a C++ backend and **Gtk** based Graphical User Interface
- Implemented Gaussian Blur, Local Histogram Equalization, **Sobel Edge Detection**, Watermark Addition among other standard features like Image Warping, Dither, Halftoning and Hue Modification

INTERESTS

Data Structures and Algorithms, Artificial Intelligence, Graph Theory, Combinatorics and Probability

COURSES UNDERTAKEN

Computer Science :	Software Systems Lab*, Data Analysis and Interpretation*, Discrete Structures*, Data Structures and Algorithms(+ lab)*, Design and Analysis of Algorithms**, Computer Networks(+ lab)**, Digital Logic Design(+ lab)**, Logic for Computer Science**, Computer Programming and Utilization, Abstractions and Paradigms in Programming(+ lab)
Statistics :	Introduction to Probability Theory*, Applied Stochastic Processes**
Other :	Introduction to Electrical and Electronics Circuits*, Biology, Organic, Inorganic and Physical Chemistry, Engineering Graphics and Drawing, Basics of Electricity and Magnetism, Quantum Physics and applications

* to be completed by December 2015   ** to be completed by April 2016

TECHNICAL SKILLS

Programming Languages :	C/C++(Proficient), C Sharp, Python, MATLAB, GNU Octave, Bash
Software Skills :	Git, AutoCAD, Mathematica, Visual Studio, Adobe Photoshop, LaTeX, CMake
Web Development :	HTML, CSS, JavaScript, PHP, Laravel (PHP), MySQL

POSITIONS OF RESPONSIBILITY

Web Convener

Student Technical Activity Body, IIT Bombay *Present*
- Developed Portals for documentation and registration of participants of STAB events
- Responsible for maintaining the STAB website, modifying content and improving functionality

Teaching Assistant

MA 105 - Calculus *Present*
- Mentoring 46 1st year students under Prof. V.D. Sharma (Mathematics Department, IIT Bombay)
- Responsible for **teaching** and **evaluating** them, providing feedback to the Instructor-incharge

Academic Resource Person

International Physics Olympiad *2015*
- Responsible for **grading the theory papers** of participants from **87 Countries** across the world
- Responsible for **moderation of marks** with Leaders from participating countries

Batch Representative

B.Tech 1st Year, Computer Science and Engineering *2014-15*
- Represented my batch in the **Department UG Council** and Intra Department events.
- Responsible for Communicating with Professors, Rescheduling Classes, Organising Extra Sessions

EXTRACURRICULAR ACTIVITIES

- Won **Bronze** medal in **Table Tennis** General Championship, IIT Bombay *2015*
- Secured 4th position in **Line Follower Competition**, a one week autonomous line-follower bot making event organised by Electronics Club, IIT Bombay *2014*
- Successfully completed a 1 year course under the **National Service Scheme** (NSS) IIT Bombay, involving ideation and implementation of solutions to Social Problems *2014-15*
- Participated in **Swachh Bharat Abhiyan**, a national campaign to clean urban environment *2014-15*
- Attended **Vijyoshi National Science** Camp organised by Indian Institute of Science, Bangalore *2013*
- Represented District Hisar at the **State Level Championship** in **Inline Roller Skating** *2005-2007*