Sumith
Computer Science & Engineering
IIT Bombay

140050081
Undergraduate Second Year
Male
DOB: 19-07-1996

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2015	9.64
Intermediate/+2	KSEEB	Sharada Pre University College	2014	95.50
Matriculation	CBSE	Sharada Vidyalaya	2012	10.00

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GitHub: `https://github.com/Sumith1896` e-mail: `sumith@cse.iitb.ac.in`
Pursuing **Honors** in Computer Science and Engineering and **Minors** in Applied Statistics and Informatics

Scholastic Achievements

- Secured **All India Rank 38**, State Rank 1 in IIT JEE Advanced out of **150,000** students in India *(2014)*
- Secured **99.99 percentile** in JEE Main amongst **1.5 million** students across India *(2014)*
- Member of the Academic Committee at **International Physics Olympiad 2015** held in Mumbai *(2015)*
- Awarded **Gold** Medal for being in the **top 35** students in the country in Indian National Physics Olympiad (INPhO) and Indian National Chemistry Olympiad (INChO) *(2014)*
- Among **top 300** students in Indian National Astronomy Olympiad (INAO) *(2014)*
- Among the **35 students** to attend NIUS 12.1 camp, a program for initiating and guiding students over an extended period of proto-research and promoting undergraduate research *(2014)*

Scholarships

- Awarded the prestigious **KVPY Scholarship**, National Fellowship for students interested in research with **All India Rank 7**, organised by the *Department of Science and Technology, Government of India* *(2014)*
- Secured **State Rank 3** in Karnataka CET with scholarship from *Minister for Primary and Secondary education, Government of Karnataka* *(2014)*

Projects

Google Summer of Code - Python Software Foundations *(May - August '15)*
Guide: Dr. Ondřej Čertík *Los Alamos National Laboratory*
- Laid out design and structure for **Polynomial** module in **SymEngine**, a standalone C++ CAS
- Optimized the lower level polynomial multiplication, speeding the benchmark to **6 times** the original
- Implemented the univariate polynomial class and **Kronecker's trick** for multiplication
- Improved the build, infrastructure and CI of SymEngine
- Implemented **Catch** as a testing framework for SymEngine

Piranha, a Computer Algebra System *(Ongoing)*
Guide: Dr. Francesco Biscani *Max Planck Institute for Astronomy*
- Understanding the internals and implementation of **Piranha**, a computer algebra system
- Developing a multi-precision integral class for general usage from **piranha::integer**

Rube Goldberg Machine *(Ongoing)*
Guide: Prof. Sharat Chandran *IIT Bombay*
- Designed a Rube Goldberg machine that simulates multiple physics situations including **perpetual machines**
- Programming using **Box2D**, a physics simulation engine on C++ platform

Football Game Engine *(May - June '15)*
Institute Technical Summer Project *IIT Bombay*
- Programmed a Football Game Engine in **Python** to simulate object interactions of a football game
- Identified and solved design problems associated with *Football*, *Players*, and *Team Strategy* using **Observer**, **Decorator** and **Strategy** patterns respectively

Sudoku Application *(July - November '14)*
Guide: Prof. Supratik Chakraborty and Prof. D.B. Phatak *IIT Bombay*
- Developed an application to solve and generate Sudoku using backtracking and **Dancing Links** algorithm
- Used the **gtkmm** library in C++ for GUI

Other projects

- **Servo**: Contributed code to **Mozilla**'s parallel browser project, **Servo**
- **BugTracker**: Developed a script to keep track of bugs in GitHub repositories
- **Roommate Finder**: Developed a web app to help the incoming freshmen to find their roommates
- **EasyFill**: Developed an application for automatic completion of Google forms and IITB forms

Conferences

- **Symbolic computation with Python, SymPy** *Python Conference India, 2015*
  - · Selected to conduct an in-depth hands on workshop on **SymPy**, a computer algebra system (CAS)
  - · Developed exercises on constructing and manipulating mathematical expressions in SymPy
  - · Demonstrated solving practical problems with SymPy and interfacing with libraries like **NumPy**
- **SymEngine: The future fast core of computer algebra systems** *Python Conference India, 2015*
  - · Selected to deliver a talk focussed on **SymEngine**, a standalone C++ fast symbolic manipulation library
  - · Developed content that includes SymEngine's thin Python, C, Julia and Ruby wrappers
  - · Explained why SymEngine is **faster** than most CAS and a fast swappable **SymPy** and **Sage** core

Technical Skills

Programming	C/C++, Python, Bash, Java
Web Development	HTML, CSS, JavaScript, PHP, MySQL, Flask, Jekyll
Software	MATLAB, Git, SymPy, GNU Octave, AUTOCAD, LaTeX

Positions of Responsibility

Teaching Assistant - Calculus (MA105) *(July '15 - Present)*
Prof. Inder K. Rana and Prof. V.D. Sharma *IIT Bombay*

- Responsible for leading weekly sessions and discussing assignments
- Entrusted with **teaching** and **assessing** a batch 45 students

Convener *(April '15 - Present)*
Web and Coding Club *IIT Bombay*

- **Managing** and **delivering** a good mix of sessions and workshops on different programming topics
- Promoting coding as a hobby and a necessary academic skill by creating an informal engaging environment

Panelist *(April '15 - Present)*
Insight, Institute Newsletter *IIT Bombay*

- Conducting interviews and surveys of the institute's student teacher community
- Responsible for **ideation**, **creation** and **publishing** articles

Key Courses Undertaken

Computer Science	Data Structures and Algorithms + Lab*, Discrete Structures*, Software Systems Lab*, Data Analysis and Interpretation*, Design and Analysis of Algorithms**, Logic for Computer Science**, Digital Logic Design + Lab**, Computer Networks + Lab**, Computer Programming and Utilization, Abstractions and Paradigms for Programming
Mathematics	Calculus, Linear Algebra, Differential Equations, Introduction to Probablility Theory*
Others	Basics of Electricity and Magnetism, Quantum Physics and application, Biology, Introduction to Electrical and Electronics Circuits*, Economics**

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

Extracurriculars

- Bagged the **Best Freshmen Application** in the **Facebook** Hackathon *(2015)*
- Successfully completed application in **Microsoft code.fun.do** *(2015)*
- Won 3^{rd} **prize for Web Development Competition** organised by WnCC, IIT Bombay *(2014)*
- Successfully completed a semester long **Paathshala** in **Speaking Arts** and **Design** *(2014)*
- Successfully completed one year of social service under **National Service Scheme** *(2014)*
- Successfully completed **Inspire Internship**, a program for motivating talented youth to take up research as a personal undertaking *(2013)*