

# Rohan Bavishi

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## CONTACT & PROFILES

### ADDRESS

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## COURSEWORK (GRADE)

Fundamentals of Computing (A\*)  
Data Structures & Algorithms (A\*)  
Discrete Mathematics (A)  
Introduction to Electronics (A)  
Mathematics - Calculus (A)  
Mathematics - Linear Algebra (A)  
Logic for Computer Science (Ongoing)  
Abstract Algebra (Ongoing)  
Computer Organisation (Ongoing)

## SKILLS

### Proficient:

C • C++ • Python •  $\text{\LaTeX}$  • Bash • HTML  
Git • Icarus Verilog

### Familiar:

Java • JavaScript • Android

### Softwares:

Photoshop • MATLAB

## PROGRAMMING ACTIVITIES

### SPOJ

SOLVED: [144](#) | WORLD RANK: 870

### PROJECT EULER

SOLVED: [228/502](#)

INDIA RANK : 16 | WORLD : 815

## POSITIONS OF RESPONSIBILITY

### ACADEMIC MENTOR COUNSELLING SERVICE

- Helping academically weaker students with coursework by organizing quizzes and doubt-sessions

### SECRETARY

QUIZ CLUB, IIT KANPUR

- Organising and participating in quizzes of various genre

## EDUCATION

**B.TECH | COMPUTER SCIENCE** | INDIAN INSTITUTE OF TECHNOLOGY, KANPUR  
Expected July 2013 – Aug 2017 | GPA : 10.0/10.0 (Overall)

**HSC | CLASS 12** | SHIVAJI SCIENCE COLLEGE, NAGPUR  
May 2013 | Aggregate : 90.16%

**AISSCE | CLASS 10** | MODERN SCHOOL, NAGPUR  
May 2011 | Aggregate : 96.4%

## ACADEMIC PROJECTS

### MEDIAN ALGORITHMS FOR DISK-RESIDENT DATA

Aug 2014 – Nov 2014 | Under [Prof. Surender Baswana](#) | Report Link : [Project Report](#)  
Repository : [Github Link](#)

Independently developed a 2-pass deterministic and a 2-pass randomized algorithm to find median of large data-sets (1 Terabyte) with performance tests

#### Deterministic Algorithm :

- Similar to the original paper by Munro-Paterson(1980)([Link](#))
- An  $\epsilon$ -approximate median ( $\epsilon = 1/n$ ) calculated in the first pass, followed by the computation of the exact median in the second

#### Randomized Algorithm :

- Basic Random-Sampling techniques using Mersenne-Twister PRNG implemented. Theoretical success probability calculated and compared with the practical performance over thousands of program-runs
- Success probability close to 0.6 achieved for medium-sized data-sets (10-50 GB)

### PEER-TO-PEER DROPBOX

Aug 2013 – Nov 2013 | Under [Prof. Subhajit Roy](#) | Github Link : [P2P Dropbox](#)

A Linux application for back-up and syncing of files between two or more peers

- Users have a shared folder across different machines, with local copies, in which any changes made are synced across all devices
- Linux [inotify](#) API used to track changes in the shared folder
- [rsync](#) used to sync changes in files/folders to ensure efficient transfer
- Multithreading with mutexes used to parallelize syncing operations
- Retry mechanisms and network detection system to ensure syncing even in networks with inter-mittent connectivity
- Command-Line-Interface to add/delete folders and show synchronization status

### FRAMA-C PROGRAM VERIFICATION

Jan 2014 - March 2014 | Under [Prof. Subhajit Roy](#)

A reading/implementation project to verify program modules using [Frama-C](#)

- Verified several common programs using [ACSL](#) language specification such as sorting/searching, median-finding, k<sup>th</sup> order statistic etc
- Proved formal properties of common implementations like bubble-sort using the [Jessie](#) plugin for deductive verification

## AWARDS & ACHIEVEMENTS

- Secured an All-India-Rank of 202 in JEE Advanced 2013 amongst 150,000 candidates
- Secured an All-India-Rank of 175 in JEE Mains 2013 amongst 20,00,000 candidates
- Secured an All-India-Rank of 33 in AMTI - Mathematics Olympiad 2013
- Best Overall Student (2011-2013) - Shivaji Science College, Nagpur