Saksham Sharma

Pre-Final Year Undergraduate, IIT Kanpur

Computer Science and Engineering

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# Educational Qualifications

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| **Bachelor of Technology** | Indian Institute of Technology Kanpur (\*) | CPI: **10.0/10.0** | July'14 - Present |
| **Senior Secondary - CBSE - Grade 12** | **D.A.V. Public School, Amritsar** | **Overall: 97.6%** | 2014 |
| **Secondary - CBSE - Grade 10** | **D.A.V. Public School, Amritsar** | **Overall: 10.0/10.0** | 2014 |
| **\*: 4 Semesters completed till now** | **CPI: Cumulative Point Index (overall).** |  |  |

# Academic Achievements and Scholarships

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| Institute Rank **1** for consecutive 4 semesters | 2014-16 |
| All India Rank **10** in Joint Entrance Exam Mains 2014 among 1.5 million candidates | 2014 |
| All India Rank **138** in Joint Entrance Exam Advanced 2014 among 150,000 candidates | 2014 |
| Academic Excellence Award winner for the session of 2014-15 | 2015 |
| Aditya Birla Group Scholarship recipient, awarded to 15 freshmen all over India for all-round performance | 2014 |
| Kishore Vaigyanik Protsahan Yojana (KVPY) Scholar, Indian Institute of Science under Dept of Science and Technology, Govt of India | 2014 |
| National Talent Search (NTSE) Scholar, organized by NCERT, Govt of India | 2014 |
| Kishore Vaigyanik Protsahan Yojana (KVPY) scholar, National Talent Search awardee (Govt. of India) | 2013,10 |
| National top 400 in National Standard Examination in Physics (for Grade **12**) in Grade 11 and 12 | 2012,13 |
| Selected for INSPIRE Scholarship Scheme, Dept of Science and Technology, Govt of India | 2014 |

# Projects and competitions

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| **Automated Improvement of Floating Point Expressions, under Prof. Eva Darulová, MPI-SWS Germany** | May'2016-July'2016 |
| * **Summer Fellowship at the Max Planck Institute for Software Systems,** Saarbrücken * Developed and evaluated a tool (in Scala) which rewrites mathematical expressions in order to lower their floating point precision errors. * Obtained very encouraging and successful results, improving expressions by up to 50%, tested on expressions taken from various research papers and other sources. * Part of a larger tool being developed to optimize numerical programs in various ways. |  |
| **Web Developer**, IIT Kanpur | May'2015-Present |
| * Working on a scalable web-app in a polyglot environment using Haskell, Scala (Akka), Elasticsearch, Node, Dart, Angular, Typescript. * Work as a full-stack developer. Have worked on frontend, backend, as well as the infra team, and handle the complete searching part of the project. * Designed and implemented a full-fledged search functionality on the backend as well as front end using Elasticsearch, JavaScript, Typescript, Angular 2. * Wrote a source code evaluator, verifying output against test data, in Haskell. * Implemented file upload functionality with Amazon's S3 backend in Scala. |  |
| **Microsoft code.fun.do**, Winning Team member ***twice*** | Jan'2015, Sep'2015 |
| * *Fresher*: Developed *PlotIt*, a graph-plotting app to parse and plot implicit mathematical functions as graphs. *Platform:* Windows Phone. * *Fresher*: Developed an app to parse and plot implicit 2D mathematical functions for Windows Phone. * *Sophomore:* Made *CSim*, a front end to an open source program simulation code using JavaScript. *Platform:* Microsoft Windows * *Sophomore*: Made a front end to an open source program simulation code for Microsoft Windows. |  |
| **ABU Robocon 2015**, Supervisor: Prof. Bhaskar Dasgupta | Oct'2014-March'2015 |
| * Worked on making 2 semi-autonomous robots capable of playing badminton on a full size court. * Image-processing to track the shuttle, predict trajectory. Used Arduino and Odroid for robot control. * Used stereo-vision, and later Microsoft Kinect to source depth data. * Involved in heavy optimizations to ensure performance, critical to response time. * Finished 11th among 85 participating teams on a National Level. |  |
| **Microsoft code.fun.do Finalists Forum 2015**, National **5th** in Coding Milestone | May'2015-July'2015 |
| * Developed *CodeInn*, an app to help users learn C programming in their spare time. <https://github.com/pallavagarwal07/CodeInn> <https://github.com/sakshamsharma/CodeInnNode> * An extensive app in C# and backend Online Judge in Node.js to run and verify user submitted programs, containing tutorials and exercises. Platform: Microsoft Windows Phone |  |
| **Microsoft Build The Shield,** National **10th** in Final Onsite round   * Qualified Online round and participated in the Capture The Flag (CTF) competition focused on Security and Offensive Hacking * Organized at Microsoft Campus, Hyderabad | Mar’2015 |
| **Machine Learning Algorithms**, Study Project under *ACA* | Jan'2015-Mar'2015 |
| * Got introduced to Machine Learning via Online Lectures from Caltech. * Implemented basic machine learning algorithms in Octave |  |
| **Public Open Source projects**, Github |  |
| * *Taffybar:* Implemented some functionalities and provided bug fixes for a status bar written in Haskell for the XMonad Window Manager on Linux. <https://github.com/travitch/taffybar> * *Snips:* Implemented functionality for a Node.js based command line utility. <https://github.com/srijanshetty/snips> * *Emacs-SMBC:* Wrote a plugin for Emacs to scrape and display the SMBC webcomic. A project to learn and play with ELisp. Published on MELPA Emacs plugins repositories. |  |

# Technical Skills and experience with

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| **Web Development** | Node.js (with Express), JavaScript, Typescript, Dart, Angular, PHP, Scala (with Akka) |
| **Programming Languages** | C/C++, Scala, Python, Haskell, Java, JavaScript, Lisp |
| **Operating Systems** | Gentoo Linux, Arch Linux, Ubuntu, Microsoft Windows |
| **Utilities** | Emacs and Vim, Git, GDB, Shell Utilities, Visual Studio, GNU Octave, OpenCV, LaTeX |
| **Platforms** | Microsoft Windows Phone, Microsoft Kinect, Arduino |

# Work and Volunteer Experience

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| Development Intern, under DoFA IIT Kanpur, Prof. Manindra Agarwal | May'15-July'15 |
| * Was adjudged as one of the best interns while being a freshman. * Worked on a large scale web application with an extensive technology stack, in a team setup, comprising of code reviews, documentation, management, among other things. |  |
| Coordinator, Programming Club, IIT Kanpur | Apr’16-Present |
| * Re-wrote, deployed, and populated the Programming Club website (<https://pclub.in>) * Helped organize the Science and Technology Council Summer Camp ’16 by mentoring 5 teams. |  |
| Secretary, Programming Club, IIT Kanpur | Apr'15-Present |
| * Organized Freshers’ Programming Contest, setting and testing algorithmic questions. * Conducted beginner programming workshops for students. * Promoted Linux use and Installed Linux on multiple systems during Linux Installation Fest. * Organized Freshers’ Programming Contest, programming workshops and Linux Install Fest |  |
| Software Corner Manager, Techkriti 2016, IIT Kanpur | Dec'15-Present |
| * Designed and implemented a new Esoteric Programming language based on Assembly, and hosted a national level competition on the same. * Wrote an Online Judge for a National High Performance Computing competition, hosted on CDAC’s Param Yuva II Supercomputer. * Handled logistics and organization of multiple other Software related events. |  |
| Technical Secretary, Association for Computing Activities, IIT Kanpur | Aug'15-Present |
| * Member of student body of CSE department, IIT Kanpur * Helped in increasing familiarity of Computer Science Freshers with their department * Mentored a group of 5 students for a semester project on Introduction to Functional Programming |  |
| Student Guide, Counselling Service, IIT Kanpur | July'15-Present |
| * Helped 9 students adjust to the rigors of college life, by providing emotional support, counselling. * Organized the Orientation Program ’15 for the fresher batch. |  |

# Relevant Courses

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| Data Structures and Algorithms (A\*) | Computer Organization (A\*) | Introduction to Programming (A\*) |
| Computer Systems Security (A) | Tools for Computing (A\*) | Discrete Mathematics (A) |
| Abstract Algebra (A) | Logic in Computer Science (A) | Probability and Statistics (A) |
| Linear Algebra and O.Diff.Equations (A) | Introduction to Calculus (A) | Linear Algebra, O.D.E.s, Calculus (A) |
| Introduction to Sociology (A\*) | Introduction to Mechanics (A) | Introduction to Electrodynamics (A) |
| A\* Grade for exceptional performance | \*: Course in Progress | A grade equivalent to 10.0/10.0 |

# Interests

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| Computer Systems Security | **Programming Languages, Approximation** | Open Source Development |
| Functional Programming | Web Development |  |

# Miscellaneous

* Sporadic blogger at my blog [*http://acehack.org*](http://acehack.org), about Linux and programming in general.
* Occasional contributor to Open-Source on *Github*: [*https://github.com/sakshamsharma*](https://github.com/sakshamsharma).
* Multiple personal projects hosted on *Github*, including multiple blogs, an Emacs plugin, and various utility repositories.
* Administer various servers in IIT Kanpur, including the community Gentoo mirror, a Gentoo-based Navya server, and the server VM of Programming Club. I deploy some services for the Campus junta, and ensure that the services handle issues, mostly by automating tasks like deployments and error detections.
* Take part in various online ‘*Capture the Flag’* style security related competitions.
* A *Linux Enthusiast*, tinker around and tweak my Linux installation in my free time.
* Winner at miscellaneous programming events on campus.
* *NASA AMES Space Settlement Design Contest*: Team Leader and International First Prize Winner in Grade 9-10 category.
* Touch typing speed 70 words per minute on an average.

# Events

* Various research talks, seminars and guest lectures attended while at the Max Planck Institute.
* Attended a full paper-reading seminar-like course on Approximate Computing during Summer ’16 at the Max Planck Institute.
* Vijyoshi National Science Camp, Indian Institute of Science Bangalore, 2013: For awardees of the Kishore Vaigyanik Protsahan Yojana Scholarship.
* ABU Robocon 2015, Pune: National Level Robotics Competition.
* Microsoft ‘Build The Shield’ 2016 National round at Microsoft Campus, Hyderabad.
* Aditya Birla Group Scholarship Interview and camp, Mumbai 2014.
* Multiple camps on qualifying various stages of National Talent Search, organized by NCERT, Govt. Of India.
* State-organized Training Camps for Indian National Physics Olympiad and Regional Mathematics Olympiad.