Saksham **Sharma**

Third Year Undergraduate · Computer Science and Engineering

Indian Institute of Technology Kanpur

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Education

Indian Institute of Technology Kanpur *Kanpur, India*

Bachelor of Technology, major in Computer Science and Engineering *2014 - 2018 (Expected)*

- Institute Rank 1 among 830 students. Cumulative Grade Point / **CGPA: 10.0/10.0**

Honors & Awards

2015	**Academic Excellence Award**, Institute Rank 1	*IIT Kanpur*
2014	**Aditya Birla Group Scholarship Awardee**, Among 15 top students from all IITs	*Mumbai, India*
2014	**All India Rank 10**, Joint Entrance Exam Mains, 1.5 million candidates	*India*
2014	**All India Rank 138**, Joint Entrance Exam Advanced, 150,000 candidates	*India*
2014	**Merit Certificate Awardee, Overall 97.6%**, Grade 12 national examination	*India*
2013	**KVPY Scholarship Awardee**, Indian Institute of Science and Government of India	*Bangalore, India*
2010	**NTSE Scholarship Awardee**, Government of India	*India*

Work Experience

Max Planck Institute for Software Systems *Saarbrücken, Germany*

research Fellow, under Dr. Eva Darulová *May. 2016 - Jul. 2016*

- Developed and evaluated a Scala tool to rewrite mathematical floating-point expressions and increase their accuracy using a genetic algorithm.
- Obtained successful results, improving expression errors by ~50%, for scientific and embedded applications.
- Part of a larger tool for optimizing numeric expressions, will hopefully appear in publication soon.

New York Office, IIT Kanpur *Kanpur, India*

Full Stack Developer, under Prof. Manindra Agarwal *May. 2015 - Apr. 2016*

- Adjudged as one of the best interns, while being a freshman
- Worked on a scalable application in a polyglot environment with an extensive technology stack.
- Designed and implemented a full search component (ElasticSearch and Angular) from scratch.
- Implemented code evaluation, attachment support and front-end functionality.
- Technology used: Scala with Akka, Node.js with Express, Angular with TypeScript, ElasticSearch

Projects

moVi: Mobile Video Chat Protocol github.com/netsecIITK/movi *IIT Kanpur*

Undergraduate Project, Prof. Sandeep Shukla *Sept. 2016 - Present*

- Developed a client for video communication akin to Mosh (mobile shell).
- Used UDP to set up a connection-less and secure channel, persistent across network IP and location changes.
- Dynamic trade-off between video quality, stuttering rate vs network resources and reliability required.
- Implemented State Synchronization Protocol, UDP Hole Punching, along with dynamic tweaking of video quality, to maintain performance and reliability across scenarios.

Anonymous and private pair matching platform acehack.org/puppy *IIT Kanpur*

Course Project, Prof. Piyush Kurur and Prof. Satyadev Nandakumar *Oct. 2016 - Present*

- Designed and implemented an algorithm for fully anonymous matching of couples.
- Allows the end users to put zero trust in the server (admin), irrespective of code on the backend.
- Used secure two party computation (assisted by an un-trusted server backend), asymmetric encryption to ensure confidentiality and fairness even during matching.

HOP: HTTP proxy for arbitrary protocols acehack.org/hop

IIT Kanpur

Undergraduate Project, Prof. Sandeep Shukla *Aug. 2016*

- A proxy to wrap and unwrap arbitrary binary data from/to HTTP packets, to bypass possible proxy restrictions.
- Stayed in *top 5* of *Github's trending* repositories in C++ on first 2 days of release.

ABU Robocon 2015, Badminton playing robots

IIT Kanpur

Member, Team Robocon IIT Kanpur, Prof. Bhaskardas Gupta *Oct. 2014 - Mar. 2015*

- Programmed and built 2 semi-autonomous robots capable of playing badminton on a standard size court.
- Used image processing with OpenCV to detect the shuttle and predict the trajectory.
- Used Kinect and Stereo Vision to get depth of field. Programmed the robot using Arduino run by Odroid.
- Finished 11th among 85 teams all over India.

Microsoft code.fun.do hackathon

IIT Kanpur

Consecutive two time hackathon winner *Jan. 2015, Sept. 2015*

- An application to parse and plot graphs of implicit mathematical functions using C#, for Windows Phone.
- A platform to learn coding for Windows Phone, with a custom online judge written in Node.js.

Extracurricular Activity

Coordinator

IIT Kanpur

Programming Club, Information Security Group *Apr. 2016 - Present*

- Rewrote, deployed, populated club website pclub.in
- Organize and conduct workshops, lectures on programming topics.
- Set problems for and organize various programming contests, capture the flag contests on campus.

Software Corner Manager

IIT Kanpur

Techkriti 2016, IIT Kanpur's National Technical Fest *Dec. 2015 - Mar. 2016*

- Made an esoteric language based on turing machines for a national competition.
- Wrote an online judge for a High Performance Computing contest run on the Param YUVA II supercomputer.

Skills

Programming	*Proficient:* C/C++, Python, Node.js; *Experienced:* Scala, Haskell
Web	Express.js with Node.js, Akka with Scala, JavaScript, TypeScript, Angular
Operating Systems	Gentoo Linux, Arch Linux, Ubuntu
Utilities	Linux shell utilities, Git, Docker, Kubernetes, GDB, ElasticSearch, LaTeX, Emacs and Vim

Coursework

A∗	Data Structures and Algorithms	A∗	Computer Organization
A∗	Introduction to Programming	A∗	Tools for Computing
A	Computer Systems Security	A	Discrete Mathematics
A	Abstract Algebra, Logic	i	Programs, Proofs and Types
i	Computer Networks	i	Operating Systems

A∗: Grade for exceptional performance *A: grade* *i: In progress*

Miscellaneous

- Blog about Networks, Linux, and programming in general at acehack.org
- Contribute to open source, maintain some well appreciated projects on Github
- Microsoft Build The Shield 2016, National 10th in final, on-site Capture The Flag contest.
- Administer student servers in IIT Kanpur, including a community Gentoo mirror, deploying and managing services for the campus community.