

Saksham Sharma

FINAL 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 Performance Index / **CGPA: 10.0/10.0**

Honors & Awards

2016	Academic Excellence Award , Institute Rank 1 with a GPA of 10/10 in all semesters	IIT Kanpur
2014	Aditya Birla Group Scholarship Awardee , Awarded to 15 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

GKE/Kubernetes Security, Google Seattle

Seattle, WA

SOFTWARE ENGINEERING INTERN

May. 2017 - Jul. 2017

- Worked on Kubernetes, Google Cloud's open source Docker container orchestration platform, to encrypt resources in cluster database at rest, a feature requested by industry for security hardening.
- Implemented envelope encryption using Key-Encryption-Keys and Data-Encryption-Keys to allow using remote cloud-based Key Management Services.
- Designed a method for allowing key rotations in a multi-master system with a shared database.
- Feature released as alpha in v1.7, integration with Google's Key Management System and others is upcoming.
- Collaborated with engineers across multiple companies for designing the feature.

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. [Link to paper.](#)

New York Office, IIT Kanpur

Kanpur, India

FULL STACK DEVELOPER, UNDER PROF. MANINDRA AGARWAL

May. 2015 - Apr. 2016

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

Projects

Tipsy: Tool to provide tips and corrections for C programs en masse

IIT Kanpur

UNDERGRADUATE PROJECT, PROF. AMEY KARKARE

Jan. 2017 - Apr. 2017

- Created a tool in Scala to parse, analyze and classify C programs from large programming courses, to help provide suggestions and tips to weak students.
- Reduced C programs to a linear high level representation. Used it to find similar features between programs, thus allowing discovering corrections in a program using reference programs.
- Classified programs to provide suggestions to students based on programs similar to their submission.

Anonymous and private couple matching platform

IIT Kanpur

COURSE PROJECT, PROF. PIYUSH KURUR AND PROF. SATYADEV NANDAKUMAR

Nov. 2016 - Apr. 2017

- Designed an algorithm and implemented a platform for anonymous pair/couple matching.
- Ensures that users' choices are not made known, even to the server admin.
- Used Diffie-Hellman like token exchange over an honest-but-curious server backend, along with asymmetric encryption, to ensure confidentiality and fairness even while matching people.
- Deployed on campus for a week, with 1800+ users and 45 matches.

Amigo: A 4-stage x64 Compiler for Golang

IIT Kanpur

COURSE PROJECT, PROF. AMEY KARKARE

Jan. 2017 - Apr. 2017

- Implemented a compiler for a fully functional subset of the Go language, in C++ and Python.
- Used flex and bison to obtain an AST, which is later translated to a x64 assembly.
- Implemented pointers, multiple return values, deeply nested arrays, with some assembly level optimizations.

moVi: Video Application for mobile networks

IIT Kanpur

UNDERGRADUATE PROJECT, PROF. SANDEEP SHUKLA

Sept. 2016 - Nov. 2016

- Developed a Linux client for video chatting, based on Mosh (mobile shell).
- Used UDP to set up a connection-less and secure channel, persistent across network IP and location changes.
- Implemented State Synchronization Protocol, UDP Hole Punching, and dynamic tweaking of video quality.

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, and Ordroid to control the robot's movements.
- Finished 11th among 85 teams all over India.

Extracurricular Activity

Coordinator PROGRAMMING CLUB AND INFORMATION SECURITY GROUP, IIT KANPUR

Apr. 2016 - Apr. 2017

- Rewrote, deployed and populated the club website at pclub.in
- Organized and conducted workshops and lectures on programming topics.
- Set problems for, and organized various programming and capture the flag contests on campus.

Microsoft code.fun.do hackathon 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.

Teaching Assistant DATA STRUCTURES AND ALGORITHMS, PROF. SUMIT GANGULY

Aug. 2017 - Present

Skills

Programming C/C++, Scala, Golang, Python, Node.js

Web Express.js with Node.js, Akka with Scala, JavaScript, TypeScript, Angular

Utilities Linux shell utilities, Git, Docker, Kubernetes, GDB, ElasticSearch, \LaTeX , Emacs and Vim

Relevant Coursework

A* Computer Networks

A* Computer Organization

A* Introduction to Programming

A*: Grade for exceptional performance

A* Operating Systems

A* Modern Cryptology

A Computer Architecture

A: grade

A* Compiler Design

A* DS & Algorithms

A Computer Systems Security

Miscellaneous

- Blog about Linux, Networks and programming in general at sakshamsharma.com
- Contribute to open source projects like Kubernetes, maintain some well appreciated projects on Github.
- Microsoft Build The Shield 2016, National 10th in final, on-site Capture The Flag contest.
- Administer a cloud in IIT Kanpur, deploying and managing services for the campus community.