

# Ayush Bansal

THIRD YEAR UNDERGRADUATE · COMPUTER SCIENCE AND ENGINEERING

Indian Institute of Technology

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## Education

Year	Degree	Institution(Board)	CGPA/%
July'16 – Present	B.Tech, CSE	Indian Institute of Technology, Kanpur	8.8/10.0
2016	CBSE – XII	Saint Josephs School, Kota (CBSE)	95%
2014	CBSE – X	Saint Pauls School, Kota (CBSE)	94%

## Honors & Awards

2016	<b>All India Rank 187</b> , Joint Entrance Exam Advanced, 200,000 candidates	India
2016	<b>All India Rank 571</b> , Joint Entrance Exam Mains, 1.5 million candidates	India
2016	<b>All India Rank 52</b> , KVPY Scholarship, Indian Institute of Science and Government of India	Bangalore, India
2015	<b>Merit Certificate, National Top 1%</b> , Indian National Chemistry Olympiad	India
2015	<b>Merit Certificate, Statewise Top 1%</b> , Indian National Astronomy Olympiad	India

## Work Experience

### Google Summer of Code

OPENPRINTING, THE LINUX FOUNDATION

May 2018 - Present

- Worked on the Common Print Dialog Backend.
- Allows easy access of the available printing queues on the network/system.
- Worked on developing backend for printing to a file.
- Worked on developing GTK3 adaptor backend connecting all CPDB backends which are currently installed.
- Technologies used: CUPS, GTK3, Dbus

### New York Office, IIT Kanpur

Kanpur, India

INFRASTRUCTURE MANAGEMENT & FULL STACK DEVELOPER, SUPERVISOR PROF. MANINDRA AGRAWAL

May 2017 - Present

- Summer Internship continued as a volunteer and peer mentor.
- Worked on a scalable microservice based web application with an extensive technology stack.
- Deployed microservices utilizing Docker, Coreos Container Linux, ConcourseCI, JenkinsCI, and have maintained the cluster on Kubernetes.
- Configured and deployed Persistent Volume Storage System.
- Configured and deployed the ConcourseCI and pipelines for different microservices.
- Developed LeaderBoard, an Automated Ranking and Scoring System using Ruby on Rails.
- Technologies used: Ruby on Rails, Kubernetes, Docker, ConcourseCI, JenkinsCI, Nginx, Coreos Applications, Rook with Cephfs, Glusterfs.

## Projects

### Kleener Klee: Improving Klee to work better for formatted input

IIT Kanpur

SUMMER PROJECT, PROF. SUBHAJIT ROY

May 2018 - Present

- Worked on a symbolic execution tool "Klee" to tackle the problem of Path Explosion in order to increase code coverage.
- Developed a framework to represent the formatted input as FSA to guide Klee.
- Developed a tool in Ruby to parse and compile the input FSA provided in xml to C code.
- Increased code coverage by 80% on the programs in Siemens Test Suite which require formatted input.

### Integrating bug synthesis into a bug finding competition

IIT Kanpur

UNDER PROF. BRENDAN DOLAN-GAVITT AND PROF. SUBHAJIT ROY

June 2018 - Present

- Worked on a Bug Injection Tool "Apocalypse" which injects bugs in C code which are difficult to locate by automated tools.
- Implemented technique for crashing the buggy C programs we get from Apocalypse.
- Implemented techniques to disguise the bugs to make it difficult for users to locate them.
- Injected bugs in "grep" code based on the implemented techniques.

## Ethical Hacking: Learnt Basic Exploits for participating in CTFs

PROGRAMMING CLUB

IIT Kanpur

Summer'2017

- Learnt exploitation techniques like buffer-overflow, integer-overflow, format strings and heap exploits.
- Used debuggers and knowledge of x86 Assembly language to exploit binary files.
- Performed various web attacks like sql-injection, XSS and CSRF.
- Learnt basics of Cryptography.

## Linux From Scratch: Compiled Linux System from Source and Built a Package Manager

ASSOCIATION OF COMPUTING ACTIVITIES

IIT Kanpur

Feb. 2017 - Apr. 2017

- Created a **Customized Linux** based operating system by compiling all packages from scratch using the host machine's kernel.
- Built a **package manager** in python which fetched the dependencies of packages and created a dependency list based on packages installed.

## Relevant Coursework

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Introduction to Programming	Discrete Mathematics	Logic in Computer Science
Abstract Algebra (A*)	Data Structures and Algorithms	Computer Organization
Programming Tools and Techniques (A*)	Probability and Statistics	Algorithms II (i)
Operating Systems (i)	Computer Networks (i)	Theory of Computation (i)

A\*: Grade for Exceptional Performance    i: In progress

## Skills

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**Languages**    Proficient: C, Python, Ruby; Experienced: C++, Golang, Javascript

**Web**    Ruby on Rails, Javascript

**Utilities**    Linux shell utilities, Git, Docker, Kubernetes,  $\text{\LaTeX}$ , GDB, Vim

## Positions of Responsibility

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**Coordinator**    PROGRAMMING CLUB, IIT KANPUR

Mar. 2018 - Present

**Secretary**    PROGRAMMING CLUB, IIT KANPUR

Apr. 2017 - Feb. 2018

## Miscellaneous

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- Enthusiastic about Systems and learning new stuff about Linux architecture, Programming languages, networking and security.
- Contribute to open source projects and maintain projects on Github.
- Mentored 4 students in developing an Alexa Surveillance IoT application using nodejs and Amazon's Lambda as part of Programming Club's Summer Project.