

# Snehan

Senior Undergraduate · Computer Science and Engineering  
Indian Institute of Technology, Kanpur

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## Educational Qualifications

Year	Degree	Institution	CGPA/%
July'17 – Present	B.Tech, CSE	Indian Institute of Technology, Kanpur	7.92*/10.00
2017	CBSE – XII	Delhi Public School, Ranchi	93.4%
2015	CBSE – X	DAV Public School, Ranchi	10.0/10.0

\*Till 6th Semester

## Scholastic Achievements

2017	Among top 0.5%, in JEE Advance	Gov. of India
2016	KVPY (Kishore Vaigyanik Protsahan Yojana), Scholar	Gov. of India
2015	NTSE(National Talent Search Exam), Scholar	Gov. of India
2015	1st Position, school level Science Talent Search Exam	DAV Ranchi

## Work Experience

### Cisco Systems

Bangalore, India

SOFTWARE ENGINEER - BACHELOR'S (Intern) - DATA CENTER

May 2020 - June 2020

- Designed an algorithm that would **search predefined patterns across log files**.
- Implemented the algorithm in **python** which also performs **multilevel searching**.
- The script can execute various operations such as **regex/pattern search, time based search** in log files.
- Performance - Searching of patterns across log files of size in few hundred MBs could be done in couple of seconds.
- Received Pre-Placement Offer** for good work.

### Summer of Code by Nutanix and Gov. of U.P.

Kanpur, India

FULL STACK DEVELOPER **PHP,MySQL,JS**

May 2018 - July 2018

- Actively Contributed as a Full Stack Developer with a team to build a web app aimed at suggesting users, educational videos.
- Implemented a **recommendation system** based on **collaborative filtering** model using python on the server side.
- Designed a website which **takes input such as ratings,interests, likes by users**, which is stored in a MySQL database.
- Tuned dependent factors such as time, length hardness for videos at each instance of reviews.

## Projects

### Implementation of RDIP: Return-address-stack Directed Instruction Prefetching

IIT kanpur

COMPUTER ARCHITECTURE, COURSE PROJECT

Feb,2020 - April,2020

- RDIP is a method to implement instruction prefetching on basis of RAS Return address Stack of a program.
- Written L1 instruction prefetcher code in C**, based on Return-address-stack of Programs, on ChampSim.
- The **benchmarks** used for testing was **ISCA IPC1 traces**.
- Experienced 22% instruction prefetching hit** which is greater than the next two line instruction prefetcher of 8% hit rate.

### JAVA lexer and Parser

IIT kanpur

COMPILERS, COURSE PROJECT

Jan,2020 - March,2020

- Learned and used lex (lexical analyzer), YACC and ANTLR (Parser).
- Used lex for lexical analysis for JAVA8 and also ANTLR(LL\* Parser) for lexing and parsing JAVA8 code.
- Made Abstract Syntax Tree of JAVA code using graphviz.

### Learning Intricacies of OS using GemOS

IIT kanpur

OPERATING SYSTEMS, COURSE WORK

Aug,2019 - Nov,2019

- Implemented and tested various operating system design such as paging, context switch, file system and multithreading:-
- file system syscall** - open(), read(), write(), fork(), dup() etc.
- paging management** using syscall like mmap(), munmap(), mprotect(), cfork() and vfork().
- multithreaded hash table using locks and semaphores** for preventing simultaneous access.

## Machine Learning

IIT Kanpur

RECOMMENDATION SYSTEM & DeCAPTCHA, COURSE ASSIGNMENTS

Aug, 2019 - Nov, 2019

- Made a **recommendation system** (multi-label classification) using a **tree+ classifier** for prediction and beam search (Bonsai).
- Build a **CNN model using keras and tensorflow** libraries to identify the characters in a given Captcha.
- Model consists of 2 hidden layers, 1 input layer containing 10,000 input nodes and 1 output layer containing 26 output nodes.
- Used "ReLU" and "softmax" as activation function in the hidden layers.

## Android App

IIT Kanpur

COMPUTING LABORATORY, COURSE ASSIGNMENTS

Aug, 2019 - Nov, 2019

- Built a native application using **react native, mongoDB and Nodejs** where user can signup, login, logout and share their thoughts.

## System Visualiser

IIT Kanpur

UNDER PROF. DEBADATTA MISHRA, DEPT. OF CSE

May, 2019 - July, 2019

- Created an application in C++ using **QtCreator**, which **visualises the computer instructions** given by gemOS (a teaching OS) running on gem5 architectural simulator using the log files generated.
- Interpreted the large log files to create meaningful information in the form of tables and animations to create the visualization.

## Cyber Security

IIT Kanpur

ASSOCIATION OF COMPUTING ACTIVITIES, IITK

Jan, 2018 - April, 2018

- Solved several CTF (capture the flag contests) in which a hidden flag (keyword) is to be found in a compiled C file by using assembly language and GDB (General Debugger) in Linux.
- Learned to alter the flow of a C program, hence able to access specific memory address/hidden functions and surpass basic security features.

## Self-Projects

TO LEARN NEW CONCEPTS

- App Development - Developed a simple app which could perform basic functions of a calculator in Android Studio
- Sudoku Solver/Generator - Build a program in C++ which can solve sudoku problems and can generate sudokus with a unique solution and a minimum number of hints using MiniSAT

## Relevant Courses

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Introduction to Programming, Introduction to logic, Discrete Mathematics, Probability, Data Structures and Algorithms  
Computer Organization, Introduction to Machine Learning, Operating System, Algorithms, Theory of Computation,  
Compilers, Database Management System, Computer Architecture,  
Principles of Programming Language(i), Embedded Cyberphysical Systems(i)

*i: In progress*

## Extracurriculars

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- Volunteer, Student Placement Office-Assisted several companies during the placement drive.
- NCC cadet-Learnt qualities of leadership, discipline, comradeship.
- Participated in inter-hall Robotriks-Built a small vehicle with a team which could detect objects and lift weights.
- Participated in intra-hall dance competition -Overall 3rd position in the competition.
- Hobbies: Guitar, Pool, Table Tennis, Video Games.

## Skills

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**Programming** C/C++, Python, BASH

**Web** PHP, MySQL, Express.js with Node.js, HTML, CSS, JavaScript

**Utilities** Linux shell utilities, Git,  $\text{\LaTeX}$  (basic)