

Aniket Sanghi

GRADUATE · COMPUTER SCIENCE AND ENGINEERING

Indian Institute of Technology Kanpur

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Education

Year	Degree	Institution	CGPA/%
July'17 – May'21	B.Tech, CSE	Indian Institute of Technology, Kanpur	9.7/10.0
2017	AISSCE – XII	Holy Cross S.S School (KAPA), Raipur	91.6%
2015	CBSE – X	Holy Cross S.S School (KAPA), Raipur	10.0/10.0

Scholastic Achievements

2020	Academic Excellence Award , awarded for academic years 2018-2019 and 2019-2020	India
2020	10/10 SPI , in all the major 5 departmental semesters (4th to 8th sem)	India
2017	All India Rank 188 , in Joint Entrance Examination (JEE) Advanced among 150,000 candidates	India
2017	All India Rank 291 , in Joint Entrance Examination (JEE) Mains among 11,00,000 candidates	India
2017	National top 1% , National Standard Examination in Physics (NSEP) & Chemistry (NSEC)	IAPT
2017	State top 1% , in National Standard Examination in Astronomy (NSEA)	IAPT
2016	All India Rank 138 , in Kishore Vaigyanik Protsahan Yojana (KVPY) among 50,000 candidates	IISC, Bangalore
2015	NTSE Scholarship Awardee , selected in top 750 students out of 8,00,000 candidates	India

Programming Achievements

2020	AIR 1 & World Rank 5 , among 26000+ participants in CodeChef April Long Challenge 2020	CodeChef
2019	Team Rank 88 , in ACM-ICPC'19 Amritapuri Regionals in 350 teams selected from 4500 teams	CodeChef
2019	Completed all 5 levels , of Google foo-bar challenge	Google
2019	All India Team Rank 31 , in Google Hash Code 2019	Google
2019	Country Rank 63 , in Round 2 of Google Code Jam 2019	Google
2018	Team Rank 179 , in ACM-ICPC'18 Amritapuri Regionals in 250 teams selected from 3000 teams	CodeChef
2020	AIR 23, Rated 6-star , among 1,80,000+ coders on CodeChef [Rating 2462]	CodeChef

Experience

Software Engineering Intern

Bangalore, India

RUBRIK, INC.

April, 2020 - August, 2020

- A remote intern targeted towards facilitating the customers with new features. Successfully implemented 2 new features from Designing the solution to implementation and release.
- **Backup Verification** - This feature will enable customers to verify the integrity of their backups whenever they feel the need. It will generate a proper report with details of the corruption (if any). Work involved API Impl, Task implementation to Unit testing, End-to-End Testing, and Stress testing.
- **Backup Failure Remediation** - This feature will enable customers to custom retry failed backup tasks in bulk. This retry path took effort as the conditions of compliance had to be met and the feature should work for all types of backup. Found suitable and minimal change after reading the codebase that perfectly solved the issue. Implemented the algorithm and tested its working with Unit-Tests.
- Both features have been launched with the new release of the product

Full Stack Developer Intern

Kanpur, India

SUMMER OF CODE, PROF. SANDEEP SHUKLA (WITH SUPPORT FROM NUTANIX AND UPSIDC)

Summer - 2018

- Implemented Saviour, an android application to detect accident with the help of gyroscopic, acceleration sensors in the android and Raspberry Pi (IoT) for detecting air-bag inflation in the vehicle for confirmation
- Notified the near-by hospitals (tracked via Google-Maps) and kins via a notification message/mail
- Realised a Desktop Application in JAVA to handle Derby database through user-friendly GUI
- Conceptualised Software Architecture, WebDev (PHP, JavaScript) and Database Management (SQL and Derby)

Projects

Velodrome

IIT Kanpur

COURSE PROJECT, PROF. SWARNENDU BISWAS

Jan. 2021 - April. 2021

- Re-implemented Velodrome, a sound and precise dynamic analyser that detects atomicity violations, on RoadRunner
- It detects atomicity violations at the granularity of method calls and generates an exclusion list of atomic methods
- Garbage collection along with non-transactional optimisations is modified to save memory by using lazy algorithms

Parallel Performance

IIT Kanpur

ASSIGNMENTS, PROGRAMMING FOR PERFORMANCE

Oct. 2020 - Dec. 2020

- Implemented program optimizations such as loop transformations, vectorization using Intel SSE AVX Intrinsics for achieving tremendous speedups (10x-30x) in serial programs.
- Used Intel TBB & OpenMP and wrote optimized CUDA kernels for extracting performance benefits from programs such as Prefix sums, 3D stencil computations and Quicksort.

Kisan-Query-Analysis

IIT Kanpur

COURSE PROJECT, PROF. ARNAB BHATTACHARYA

Oct. 2020 - Dec. 2020

- Mined the Kishan Call Centre query data from the government portal <https://data.gov.in/>
- Analysed the data and formulated various intricate details that can be used to improve the functionality of the centre
- Developed a FAQs generator using clustering which given the timeline and region, gives the top 10 FAQs.

Oz Interpreter

IIT Kanpur

COURSE PROJECT, PRINCIPLES OF PROGRAMMING LANGUAGES

Nov 2020

- Developed an interpreter from scratch for a simple kernel language, Oz
- Implemented all the basic features of a declarative sequential language such as application of non-suspendable and suspendable statements, unification of variables and values, maintenance of a single assignment store and a semantic stack, and pattern matching.

Personal Diary

IIT Kanpur

COURSE PROJECT, PROF. NISHEETH SHRIVASTAV

Jul. 2019 - Nov. 2019

- Built a MERN Application to write personal notes along with pictures to collect your memories
- Used Express.js, MongoDB with Node.js on server-side and React-native on client side
- Used mobile-native functionalities including camera, gallery, storage to click and upload pictures
- Code can be found at <https://github.com/AniketSanghi/Personal-Diary>

Building gemOS

IIT Kanpur

COURSE PROJECT, PROF. DEBADATTA MISHRA

Jul. 2019 - Nov. 2019

- Implemented file system syscalls including open(), write(), read(), pipe(), fork() etc
- Implemented multi-level paging management for syscalls like mmap(), munmap(), mprotect()
- Implemented cfork() and vfork() by properly managing the shared memory regions and policies
- Designed a read-write lock and implemented multi-threaded hashtable with Open Addressing using mutual exclusion devices like locks and semaphores for preventing concurrent access.

Machine Learning

IIT Kanpur

COURSE PROJECT, PROF. PURUSHOTTAM KAR

Jul. 2019 - Nov. 2019

- Experimented with various classification algos including SGD, Coordinate Descent, Coordinate Maximisations
- Improved accuracy of FastreXML on a given sample dataset without affecting the time and space complexity
- Implemented a CNN with linear layers to solve a given image classification problem using pytorch

Filesystem in USErspace

IIT Kanpur

ACA PROJECT, PALLAV AGRAWAL

Jan. 2018 - Apr. 2018

- Implemented a FUSE filesystem in Golang with basic read/write/edit functionality using bazil's fuse library
- Actualized an IITK Student Search purely in bash by scraping data from office automation via curl
- Code can be found at <https://github.com/AniketSanghi/CFT>

Digital Monopoly Board Game

IIT Kanpur

COURSE PROJECT, PROF. INDRANIL SAHA

Jul. 2017 - Nov. 2017

- Materialised a multiplayer Digital Monopoly board game for personal computer in Python 3.6
- Realised the GUI using pygame, tkinter libraries and back-end using object oriented programming
- Code can be found at <https://github.com/AniketSanghi/Monopoly-game>

Mini Projects

polySAT

[HTTPS://GITHUB.COM/ANIKETSANGHI/POLYSAT](https://github.com/ANIKETSANGHI/POLYSAT)

IIT Kanpur

Oct 2018

- Implemented a SAT solver for propositional logic using the DPLL Algorithm in C++
- Experimented with various optimisations including 2-literal watch method and MOMS Algorithm

Cipher Decoder

[HTTPS://GITHUB.COM/ANIKETSANGHI/CIPHER_DECODER](https://github.com/ANIKETSANGHI/CIPHER_DECODER)

IIT Kanpur

Mar 2019

- Actualized a decoder to decode substitutional cipher including Gold-Berg cipher in Haskell

Technical Strengths

Programming	C/C++ (Proficient), Python(Proficient), Scala(Proficient), Haskell, Golang, JAVA
Parallel	OpenMP, Intel TBB, CUDA, MPI, RoadRunner
Web	Express.js, Node.js, React-native, React, MongoDB, MySQL, PHP, Javascript
Utilities	Linux shell utilities, Git, Docker, Phabricator, OSX, Arduino, \LaTeX , Vim, HDL (Verilog)

Relevant Coursework

A*	Operating System	A*	Prog. for Performance [PG]	A*	Functional Programming
A*	Computer Networks	A	Modern Cryptology [PG]	A*	Analysis of Concurrent Progs [PG]
A*	Social Psychology	A*	Comp. Lab (Bash + Haskell)	A*	Logic for Computer Science
A	Introduction to ML [PG]	A	Parallel Computing [PG]	A	Advanced Algorithms
A	Computer Organisation	A	Data Structures & Algorithms	A	Theory of Computation
A	Compilers	A	Database Management	A	Data Mining [PG]

A*: Grade for exceptional performance

i : ongoing

Extracurricular Activity

Mentor CONNECTING.THE.DOTS, ASSOCIATION OF COMPUTING ACTIVITIES

Jan. 2020 - Mar. 2020

- Introduced the students with various graphs and various graph algorithms

Mentor ALGORITHMS INDEPTH, PROGRAMMING CLUB

May. 2019 - Jul. 2019

- Taught various algorithm paradigms including Dynamic Programming, Greedy, Graph Theory, Game Theory
- Introduced various advance algorithms including KMP, Persistence, Centroid Decomposition, Huffman Coding

Secretary ASSOCIATION OF COMPUTING ACTIVITIES

Apr. 2018 - Apr. 2019

- Helped with conducting coding contests, hackathons and other events in the campus