



Manoj Kumar

FOURTH YEAR UNDERGRADUATE · IIT DELHI

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Education

year	Degree	Institute	%age or CGPA
- - -	(Dual) B.Tech+M.Tech	Indian Institute of Technology, Delhi	8.22
2017	Class 12th	Navjeevan Public School, Sikar	98.20
2015	Class 10th	ABN Sr. sec. school, Maulasar(Raj)	93.50

Scholastic Achievements

- 2018 **Joint Entrance Examination(Advanced)** AIR 1097 among more than 1,500,000 students
- 2018 **Joint Entrance Examination(Mains)** AIR 405(OB) among more than 1,500,000 students
- 2017 Awarded with **silver medal** by Education Minister of Rajasthan for performing exceptionally well in class XII
- 2017 Secured **3rd merit** in Class XII(RBSE board) among more than **2,000,00** students who appeared in the exam
- 2020 Certified in Data Structures and Algorithms Program (**CCDSAP**) by **Codechef**
- 2020 **Mission Helix's Coding Contest** Rank **3** in All India organized by Coding Club, India

Engineering Courses

Computer Science	Machine Learning, Computer Networks, Analysis & Design of Algorithm, Artificial Intelligence, Programming Languages, Cryptography, Data Mining, Operating Systems, Database Management Systems, Parallel and Distributed Programming, Discrete Mathematics, Data Structure and Algorithms
Mathematics	Probability theory and Stochastic Process, Linear Algebra and Differential Equations, Calculus
Mgmt. Studies	Managerial Accounting And Financial Management, New Venture Creation

Work Experience

BuzzTara Pvt. Ltd.

BACKEND DEVELOPER INTERN

Mumbai, India

April 2021 - May 2021

- Worked as a **Java developer** in an early-age startup and developed APIs for sign-up and sign-in of brands and influencers.
- Springboot** framework is used to configure the project and **postgresql** is used to access the database and hosted it on AWS.

Aarhus University, Denmark

RESEARCH ASSISTANT

Prof. Magnus Madsen

May 2021 - July 2021

- Worked with the main authors of **Flix programming language** (www.flix.dev) to improve the compiler and its VSCode extension.
- Language-Server-Protocol** is used to communicate between the client and the server, which is directly connected to the compiler.
- Added features like Auto-completion, highlight, semantic and symbol support, add - remove file packages, auto-run and code-lenses.

Major Projects

Tour On Wheels: A railway ticketing platform

Prof. Maya Ramanath, IIT Delhi

COURSE PROJECT: DATABASE MANAGEMENT SYSTEMS, POSTGRESQL, FLASK-PYTHON

March 2021 - April 2021

- Implementation of a web application that uses the complete database of Indian Railways to create a platform similar to IRCTC.
- PostgreSQL** queries are made and managed multiple tables to answer the queries and store the information of booked tickets.
- The application supports train searching, ticket booking, PNR enquiry, Ticket Deletion and Current Ticket status.
- HTML and CSS along with bootstrap is used for the frontend whereas **Flask** framework is used for backend to communicate with database.

Emotion Detection from facial Features

COURSE PROJECT: MACHINE LEARNING, PYTHON

Prof. Parag Singla, IIT Delhi

February 2020 - March 2020

- Implementation of **CNN**-based and **PCA+SVM** based machine learning models to predict emotion detection from facial features.
- Compared the accuracy of self-implemented models of Neural Networks, Decision Trees and SVM models with inbuilt python libraries.

Job Scheduling and Management using advanced data structures

COURSE PROJECT: DATA STRUCTURES AND ALGORITHMS, JAVA

Prof. Subodh Kumar, IIT Delhi

October 2019 - November 2019

- Module analyze multiple jobs and their costs for different users and projects to maximize the projects done within a finite budget.
- It executes the jobs on the basis of priority and budget available with exhaustive record of status of all jobs and timed operations.
- Multiple efficient **Generic Data structures** like self-balancing **Red-Black Tree**, **Trie** and **MaxHeap** implemented. These data structures are completely generic and used their efficiency for optimization at large scales containing large dataset.

Multi-threaded Producer Consumer Platform

COURSE ASSIGNMENT: DATA STRUCTURES AND ALGORITHMS, JAVA

Prof. Subodh Kumar, IIT Delhi

October 2019

- Module programmed in Java for multiple buyers and sellers to purchase and sell items using **thread synchronization** and **locks**
- Maintained inventory and catalogue which sells product of the most preferred seller by maintaining priorities of each seller.
- Solved the problem of multiple threads to remain **synchronized** and sell the products from catalogue maintaining **thread safety**.

3D Structures using Graphs

DATA STRUCTURES AND ALGORITHMS, JAVA

Prof. Subodh Kumar, IIT Delhi

November 2019 - December 2019

- **Graph data structure** implemented by storing vertices and edges of a triangle in nodes to create 3D structures by linking triangles.
- Queries handled such as insert, neighbors, **topological distance**, centroid, **connected components**, **diameter** of the shape etc.
- **Dijkstra Algorithm** is implemented to find the minimum distance between two connected triangle nodes.

Technical Skills

Programming Skills	Java, SQL, Python, C/C++, MATLAB, javascript
Softwares	Android Studio, Visual Studio, Wireshark, Git
Hardwares	Xilinx ISE Design Suite and Vivado (VHDL and Verilog), MIPS assembly
Development	HTML, CSS, JavaScript, Java, php, SQL

Extracurricular Activities

Representative, Indoor Sports Club (ISC), IIT Delhi

April 2019 - March 2020

- Responsible for **administering all hostel affairs** related to Chess, Carrom and Snooker Pool in allotted hostel budget.
- Guided participants to **secure Silver** in Chess & Snooker Pool clinching **Prestigious ISC Trophy among 13 hostels**.
- Managed and executed various competitions- Inter-hostel and Inter-IIT Open Trials to increase Indoor Sports culture.

Volunteer, National Service Scheme (NSS), IIT Delhi

September 2018 - PRESENT

- **Apna Parivaar**: Selected as the *best volunteer* of the project. It aims to provide opportunities to orphan kids to gain confidence and develop their personality. It also consists of organizing educational trips, doubt clearing and teaching sessions.
- **Bachpan**: Volunteered in Bachpan that aims at improving the quality of life of the less fortunate children by providing them education and healthy childhood in and around IIT campus which include children of the construction site workers inside the campus.
- **Vidya Teaching Project**: Project aims to teach the students around IIT Delhi during COVID19 lockdown via video conferencing calls.

Academic Mentorship, Board of Student Welfare, IIT Delhi

July 2019 - December 2019

- Selected for **Academic Mentor** of MCP100 (Engg. Visualization & Comm.) for one semester on the basis of academic performance.
- Guided First year students by organizing doubt clearing meetings and **tutorial solving sessions** to prepare them for the exams.

- **Marketing Team Head** in the *biggest cultural fest of north India, Rendezvous, IIT Delhi*

July 2019 - October 2019

- **Events Team Head** in *Tryst*, annual technical fest of IIT Delhi

February 2019 - March 2019