Vishal Singhania

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EDUCATION

Manipal University Jaipur
Faculty of Engineering
BTech in Computer & Communication Engineering
Minor in Data Science

July 2024 | Jaipur, Rajasthan
Cum. GPA: 8.87 / 10.0 (till 6th Sem)

SKILLS

Programming & Scripting
C • C++ • Python • Bash • SQL
R • MATLAB • Java

Tools & Frameworks
Backend Development:
Git • Linux • Django • FastAPI
Docker • PostgreSQL • MongoDB

Data Science & Machine Learning:
SciPy • Pandas • NumPy • NLTK
Matplotlib • scikit-learn • TensorFlow

COURSEWORK

Undergraduate
Design & Analysis of Algorithms
Data Structures & Algorithms
Object Oriented Programming
Operating Systems
Database Systems
Computer Networks
Data Mining & Warehousing
Artificial Intelligence & Deep Learning*
Big Data Analytics*
Information Retrieval*
Blockchain Technologies*
Probability & Statistics
Discrete Mathematics
*(*to be completed by Dec 2023)*

OpenCourseWare
Graph Algorithms *by UCSD*
CCNAv7: Intro to Networks *by Cisco*
Programming in Python *by Python Institute*
C++ Specialization *by UIUC*

LINKS

Competetive Programming
CodeChef/big_v • Codeforces/BigV_
Topcoder/BigV_ • AtCoder/BigV

Profiles
Github/SinghaniaV • Leetcode/bigV_
Kaggle/bigvish • LinkedIn/singhaniav

PROJECTS

Conduit
Databases + Backend
FastAPI | PostgreSQL | Python

- Backend logic implementation of a dynamic social blogging platform like ***Medium.com***, influenced by the RealWorld GitHub initiative.
- API Specifications and Features:
  User Authentication using ***JWT*** for secure access. ***User Management***: Create, update, delete user profiles. ***Article CRUD***: Create, retrieve, update & delete articles with details. ***Commenting***: Leave, view, and delete comments on articles. ***Favorite Articles***: Mark articles as favorites. ***Follow/Followers System***: Connect users through following/unfollowing. ***Pagination*** for efficient listing of articles.
- Testing Framework:
  Unit Testing: Tested individual components with ***mock dependencies***. ***Integration Testing***: Ensured smooth interaction between components. ***API Testing***: Automated API tests for responses, status codes, and data integrity. ***Edge Case*** and ***Security Testing***: Validated edge cases and security measures.
- Continuous Integration (CI) and Continuous Deployment (CD): *(upcoming)* Integrate testing in the CI/CD pipeline for thorough validation before deployment.

Watson X
Natural Language Processing + Information Retrieval
NLTK | Python

- Built a question answering system similar to IBM Watson. It operates on a corpus of text documents and aims to find the most relevant documents and passages to a given query.
- For document retrieval, the system uses ***tf-idf (term frequency-inverse document frequency)*** to rank them based on the frequency of query terms and their overall importance in the corpus.
- Passage retrieval is performed by subdividing the top document(s) into sentences. In scoring the passages, the system employs a combination of ***inverse document frequency*** and a ***query term density*** measure.

Nand 2 Tetris
Operating Systems + Compilers + Architecture
HDL | Assembly | C

- Following the guidelines at Nand2Tetris, implemented a fully functional computer from scratch (***software hierarchy*** + ***hardware platform***).
- The hardware platform involves implementing the ***elementary logic gates*** using an ***HDL***. Then, a ***CPU***, and a ***RAM*** chip from combinational & sequential logic.
- The software hierarchy involves implementing a ***high-level language***, a ***compiler***, a ***Virtual Machine translator*** to translate the compiled code to machine language, then an ***assembler*** to translate it to binary, and finally, a basic ***operating system*** that closes gaps between the high-level language and the underlying hardware platform.

ACHIEVEMENTS

2023	**3 star (Div. 2)**	Peak **rating of 1630** on CodeChef
2023	**India Rank of 4944**	Google's **Code Jam** Round A
2023	**Global Rank of 293**	CodeChef Starters 75
2023	**Contributor**	Kaggle (a data science competition platform)
2022	**Global Rank of 946**	Code-a-thon organized by IIT BBS
2022	**Qualified Round 1**	ACM Semi Code (an Institute level Code-a-thon)
2021	**Merged Pull Requests**	Contribution recognized in **Hacktoberfest**
2021	**Contributor**	to Wikipedia articles through an **Edit-a-thon**