

Vishal Singhanian

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EDUCATION

MANIPAL UNIVERSITY JAIPUR

Faculty of Engineering

BTECH IN COMPUTER AND COMMUNICATION ENGINEERING MINOR IN DATA SCIENCE

July 2024 | Jaipur, Rajasthan

Cum. GPA: 8.91 / 10.0 (till 5th Sem)

SKILLS

PROGRAMMING & SCRIPTING

Comfortable:

C • C++ • Python • Java

Familiar:

MATLAB • Shell (BASH/PoSh) • Go

HTML, CSS • JavaScript • \LaTeX

TOOLS & FRAMEWORKS

Development:

Git • Flask • Linux • Docker

Data Science:

MySQL • SciPy • NumPy • Pandas

Matplotlib • Seaborn

COURSEWORK

UNDERGRADUATE

Computer Science:

Design and Analysis of Algorithms

Data Structures and Algorithms

Object Oriented Programming

Operating Systems

Database Systems

Computer Networks

Machine Learning*

Cryptography & Security

Computer Architecture

Automata Theory & Compiler Design*

Mathematics & Data Science:

Soft Computing

Data Mining*

Differential Equations

Probability & Statistics

Linear Algebra

Discrete Structures

[*to be completed by May 2023]

LINKS

COMPETITIVE PROGRAMMING

CodeChef/big_v • Codeforces/BigV_

AtCoder/BigV

PROFILES

Github/SinghanianV • Leetcode/bigV_

Kaggle/bigvish • LinkedIn/singhanianv

PROJECTS

WORDLE | INFORMATION THEORY + ALGORITHM

SciPy | Python

- A terminal-based implementation of the viral game **Wordle** with six attempts to guess a five-letter word, providing color feedback for the player's guesses.
- By leveraging Grant Sanderson's **entropy concept**, developed an **algorithm** utilizing a dataset of 13,000 five-letter words, which can solve any wordle game in no more than six attempts. The algorithm uses **information theory** to determine the optimal next word guess.

TORRSTREAM | CONCURRENCY + PIPELINING + NETWORKS (ongoing)

Go

- BitTorrent is a peer-to-peer (P2P) protocol that allows decentralized distribution of data over the internet.
- This project involves developing a BitTorrent client for **content streaming**.
- The second stage of the project aims to accelerate file transfers by utilizing the **SCION Internet Architecture**.

JACK TOOLCHAIN | COMPILERS (ongoing)

Assembly | C++

- Following the guidelines of **Nand2Tetris**, implementing the Jack Compiler in C++.
- This project involves developing a two-phase recursive descent compiler. The first phase converts source code to intermediate virtual machine code, followed by the second phase that converts the virtual machine code to assembly. Finally, an assembler is used to translate the assembly code to binary.

STOCK EXCHANGE | WEBAPP + DATABASE + API

Flask | SQLite3 | Python | HTML, CSS | JavaScript

- The WebApp enables authenticated users to trade stocks using simulated funds, access **real-time** stock quotes from the **IEX API**, and view their portfolio's transaction history.

ENCRYPTED CHAT | CRYPTOGRAPHY + NETWORKS

Socket | Python

- A terminal-based peer-to-peer (P2P) chat application that uses an **Asymmetric-Key** cipher (RSA) to ensure secure messaging between users.
- One node listens on a specific port number at an IP address, while the other node initiates a connection by using a connection-oriented **Transmission Control Protocol (TCP)**.

PASSWORD MANAGER | CRYPTOGRAPHY

Fernet | Python

- A terminal-based Password Manager which uses the **Fernet** module in **Cryptography** package to encrypt passwords using a **Symmetric-Key** cipher.

ACHIEVEMENTS

2023	3 star (Div. 2)	Peak rating of 1630 on CodeChef
2023	Global Rank of 293	CodeChef Starters 75
2023	Global Rank of 356	CodeChef Starters 76
2022	Global Rank of 946	Codeathon organized by IIT BBS
2022	Qualified Round 1	ACM Semi Code (an Institute level Codeathon)
2021	Open Source	Contribution recognized in Hacktoberfest