Tirthraj Mahajan

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Summary

A passionate software engineer who is driven by attention to detail & specializing in Full Stack Web Development. Dedicated to building robust, scalable systems. Actively seeking opportunities to contribute to organizational success and continuously learning and adapting to new technologies.

Skills

Core Competencies - JavaScript · Next JS · NodeJS · Express JS · Python · Flask · MySQL · PostgreSQL · Supabase · Firebase · CSS · Bootstrap/Tailwind/Shadcn · Git · GitHub · C++ · Java · NGINX · Docker · AWS

Fundamentals - Backend Development · Database [DBMS] · Data Structures and Algorithms · Object Oriented Programming [OOP] · Distributed Systems · Cybersecurity

Extras – Familiarity with REST APIs · GraphQL · gRPC · Web-Sockets · API Integration & Security · Postman · Software Deployment · Software Design

Projects & Publications

Scalp Smart   [S.E Project]
Tech: Flask, Firebase, SQL , JavaScript, HTML, CSS, Bootstrap
Achievement: Runner-up in PICT's Impetus and Concepts
A platform designed to predict baldness stages using AI and Computer Vision via images uploaded by users. It provides predictions indicating the various stages of baldness. **Responsible for designing & developing the backend, frontend and the database schema**. Can be found at: http://scalpsmart.onrender.com/

Local Shrinks   [Hackathon Project]
Tech: Next JS, Firebase, Tailwind CSS
Achievement: Runner-up at Techfiesta Hackathon (36 Hour hackathon)
A platform that provides easily accessible mental health support, including real-time counseling, stress management tools, and mood tracking. Developed a chatbot & a question-based algorithm for diagnosing depression and anxiety. **Responsible designing & developing the backend, frontend and the entire database schema.** Can be found at: https://techfiesta-web.vercel.app/

C++ Micro Web Framework   [Personal]
Tech: C++ and Network Programming (Winsock2)
Created a web framework (similar to ExpressJS) from scratch which supports all types of HTTP requests. Key features of this framework include fast routing via AVL Trees, rapid response rendering, middleware chaining and SQLite Database connectivity. Utilized Windows Socket API (Winsock2) for network communication.

DigiBank   [Barclays Hackathon]
Tech: Next JS, Node JS + Express JS, Supabase, Shadcn UI, Web Sockets
A banking platform for secure document upload & complaint management portal. Key features: Complaint Classification, Prioritization, Summarization & Ticket Status Monitoring. Utilized industry standard Cyber Security algorithms like RSA, AES and Scrypt. **Published research paper titled "Secure Encryption of Documents and Smart Complaint Management for Banking Applications."** Can be found at: https://pijet.org/papers/volume-1%20issue-2/Final%20Revised%20Paper_Pijet-12.pdf

Dynamic Memory Allocator   [Personal]
Tech: C++
Created a custom memory allocator in C++ from scratch designed to manage memory with fine control and efficiency. It implements chunk-based memory management using a best-fit allocation strategy and a binary search tree (BST) to track free chunks by size. Used the sbrk system call to manage heap space, providing dynamic expansion and shrinkage of memory as needed and reducing internal fragmentation of memory. Implemented new keyword functionality to support for object oriented programming

Query-Cortex   [Hackathon Project]
Tech: Next JS, Firebase, Docker, Flask, Fast API, Postgresql, Gemini
Achievement: Winner at Pulzion (PICT ACM Student Chapter's Event) Hackathon – Web N App
Developed a solution that enables users to interact with databases using natural language questions and receive insightful answers. The solution leverages natural language processing (NLP) to understand user queries, optimize database access using indexing, and generate concise answers. Furthermore, the solution contains the capability to transform database query results into interactive charts

All Projects can be found at https://tirthraj07.onrender.com/projects/

Experience

Persistent Systems Mentorship Program   Jun 2024 – Aug 2024
Developed an internal tool for Persistent Systems which automates employee pre-onboarding process. Key features:
BGV Document upload & hosts videos necessary for an new joining employee for post-onboarding processes.
Additionally includes security groups for permission based access control.

PICT Inhouse Internship (Virtual Lab Assistant)   Feb 2024 – Apr 2024

Created a website that lets students visualize the lab practical easily and learn theory behind them

AWS Cloud Club PICT (Technical Team Member)   Apr 2024 - Present

Education

Pune Institute of Computer Technology (B.E Computer Engineering)   2024-2026
CGPA : 9.5

S.P. College, Pune   2022
HSC Score: 92.83%

SPM English School, Pune   2020
SSC Score: 92.60%

Additional

- Pulzion (ACM Student Chapter's Event) Winner 2024: Web N App for our project Query Cortex
- Pulzion (ACM Student Chapter's Event) Winner 2023: Web N App, Hire Hustle, Dexterous
- Technical Writer on Medium: https://medium.com/@tirthraj2004
  - Introduction to Microservice Architecture
  - Introduction to Database Clustering using PostgreSQL , Docker and Pgpool-II
  - Deploying a Node JS Application on EC2 Step by Step

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