Chiranjivi S

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Education

IIIT Kottayam **Nov. 2022 – Present**
Bachelor of Technology in Computer Science ***(CGPA : 8.5)*** *Kottayam, Kerela*

Relevant Coursework

- Data Structures
- Algorithms Analysis
- Artificial Intelligence
- Computer Architecture
- Operating Systems
- Database Management
- Compiler Design

Projects

JOD Chess Engine – Real-Time Move Evaluation & Validation **May 2024 - June 2024**

Tech Stack: *Pure JavaScript, No Libraries and Frameworks*

- Built a custom **chess engine** using pure **JavaScript**, creating a lightweight alternative to the **chess.js library**.
- Implemented **move legality validation**,ensuring rules like **castling**, **en passant**, and **pawn promotion** are followed.
- Developed a feature to highlight all possible **moves** for a selected piece, enhancing the **gameplay experience**.
- Designed and implemented a **Player vs Player** chess game utilizing the engine for **real-time move validation** and feedback.
- Hosted the chess game on **GitHub Pages** for easy access and sharing; integrated with **GitHub** for version control.

PixelVerse – A 2D Metaverse for Social Interaction **January 2025 - Present**

Tech Stack: *React,Redux,Socket.io,Simple-Peer,Passport.js,Node.js,Express, PostgreSQL,Sequelize,HTML5 Canvas*

- Created a **2D social media metaverse** where users can form groups, choose a specific map, and invite friends to join in an immersive world.
- Enabled users to interact with **avatars** by moving around a map, experiencing a dynamic and social environment.
- Integrated **Simple-Peer** for group video calls, utilizing a mesh topology for direct peer-to-peer communication between users.
- Implemented real-time **voice and video calling** within the map, allowing users to have seamless conversations with other group members.
- Developed a **Study Room** feature where users can engage in peer-to-peer conversations via video or voice calls for study sessions.
- Designed a **chat system** where group members can message and communicate in real-time,enhancing social interaction.
- Created a **typing game** section using **HTML5 Canvas**, complete with a leaderboard to track top scorers and encourage friendly competition.
- Added a **coding area** where new daily coding problems are generated for users to solve, allowing them to maintain a streak and appear on the leaderboard.
- Introduced **daily quotes and jokes** that spawn each day for users to enjoy and share with their group.
- Check out the project on **GitHub**.

CORP-Comment – A Public Review & Opinion Platform **July 2024 - August 2024**

Tech Stack: *React, Zustand, TanStack Query, FastAPI, PostgreSQL, SQLAlchemy, JWT Auth*

- Developed a **social media platform** similar to **Reddit**,where users can **share opinions & reviews** about companies.
- Implemented **user authentication** using **JWT**, allowing users to securely log in and participate in discussions.
- Enabled users to **upvote** reviews or opinions, promoting high-quality content within the community.
- Designed a **search system** to find reviews about specific companies quickly and efficiently.
- Developed a feature to display the **top 10 trending reviews or opinions** based on community engagement.
- Used **TanStack Query** for efficient data fetching and caching, improving application performance.
- Check out the project on **GitHub**.

PyLox – A Python-Based Interpreter for Lox **November 2024 - Present**

Tech Stack: *Python, Lexing, Parsing, AST, Interpreter Design, Garbage Collection*

- Currently developing a **Python-based interpreter** for the **Lox programming language**, a dynamically typed, interpreted scripting language.
- Implemented **lexical analysis** to tokenize source code, converting characters into meaningful tokens.
- Designed a **recursive descent parser** to transform tokens into an **Abstract Syntax Tree (AST)** for execution.
- Building an **interpreter** to execute parsed Lox code, supporting expressions, variables, and control flow statements.
- Working on **object-oriented features**, including **classes**, **inheritance**, and **first-class functions**.
- Exploring **closures** and **lexical scoping** to enhance functional programming capabilities.
- Planning to implement **garbage collection** mechanisms for efficient memory management.
- Inspired by Bob Nystrom's book **"Crafting Interpreters"**, following best practices in language implementation.
- Check out the project on **GitHub**.

Achievements

Solved over **400+ coding problems** across various platforms including **Codeforces, LeetCode, and GeeksforGeeks**.

Technical Skills

Languages: Python, Java, C++,Go,Rust,JavaScript,TypeScript, HTML/CSS, SQL,
Developer Tools: VS Code, Docker,AWS
Technologies/Frameworks: React, Node.js, Fastapi, FastAPI, MongoDB, Firebase, Postgres, Nextjs, Gin, Express, Hono