Giridhar Nair

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Education

University of Texas at Dallas Richardson, TX

Bachelor of Science in Computer Science *Expected Grad: May 2027*

Relevant Coursework

Discrete Math For Computing I, Computer Science II, Computer Science I, Differential Calculus, Integral Calculus

Experience

Data Analytics Research Internship June, 2022 – July, 2022

University of Texas at Dallas *Richardson, TX*

- Leveraged SQL to manipulate and retrieve data from multiple datasets, efficiently extracting valuable insights and identifying significant patterns across 1000+ records
- Created appealing Tableau visualizations that facilitated clear communication of analyzed data and patterns, leading to a 30% improvement in data analysis efficiency and informed decision-making
- Utilized the Matplotlib Python library in Jupyter Notebook to generate visualizations from complex .csv files to effectively communicate data insights

Projects

CodeTogether | *Reacts.js, Node.js, Docker* | Demo | Github

- Developed a web-based collaborative code editor supporting 74 programming languages, leveraging Microsoft's Monaco editor for efficient syntax highlighting via the monaco-editor/react node package
- Achieved 93% performance and 99% structure ratings from GTmetrix, a reputable online website auditing tool
- Integrated real-time document update propagation using Y-Webrtc, an open-source back-end solution enabling appends of up to 6000 characters in just 1 ms, deployed thorugh Heroku
- Utilized Axios to send HTTP requests to the JDoodle REST API for code compilation, attaining an average latency of 1,508ms

Pong Game AI | *Python* | Github

- Utilized NEAT (NeuroEvolution of Augmenting Topologies) algorithm installed via the neat-python library to train AI agents to playing the game of Pong
- Implemented 3 difficulty levels with varying AI configurations and training generations, including a hard difficulty that underwent 50 generations of the NEAT algorithm, with a fitness threshold of 300
- Utilized Pygame to create an interactive version of Pong and provided instructions and information for selecting different difficulty levels via the command line

A* Algorithm Visualizer | *Java* | Github

- Visualized the A* algorithm on a 15 by 11 grid using a single thread executor
- Amplified visualizer functionality by incorporating 4 features: adjustable speed, interactive obstacle integration, start/stop/pause controls, and dynamic sound effects utilizing Java.awt, Javax, and Java Swing libraries
- Enhanced UI by implementing the FlatLaf dark mode theme, an open-source cross-platform Look and Feel library for Java Swing, with a lightweight file size of 800 KB

Sudoku Solver | *Java* | Github

- Implemented a recursive backtracking algorithm to solve Sudoku puzzles with an adjustable speed, achieving a solve time of under 2 ms on the fastest setting
- Expanded solver capabilities by incorporating a dynamic Sudoku puzzle generation that produces puzzles of varying difficulties

Technical Skills

Languages: Java, Python, JavaScript, HTML/CSS, SQL
Frameworks and Libraries: React.js, Tailwind CSS, Node.js, Java Swing, NumPy, Matplotlib, TensorFlow, PyTorch
Developer Tools: Git, Heroku, Vercel, IntelliJ, VS Code, Eclipse, PyCharm