Vignesh Sivakumar

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Objective

Full Stack Developer with expertise in modern web technologies, building scalable applications, and secure authentication. Passionate about problem solving, open source contributions, and industry best practices.

Education

Bannari Amman Institute of Technology, BE in Information Science and Engineering — Sept 2023 – July 2027

- **CGPA:** 7.4/10.0
- **Relevant Courses:** Computer Architecture, Computational Theory

Projects

Portfolio Website — GitHub

- Built a responsive personal portfolio with React.js to showcase projects and skills.

Classless – Inclusive AI Tutor for All — GitHub

- **Problem:** Millions of students in rural and low-income communities lack access to quality digital education due to poor internet connectivity, local language limitations, and affordability issues.
- **Solution:** Built an AI-powered learning platform accessible via web, SMS, IVR, and offline-first mobile app.
- Developed multilingual React/React Native interface with OCR-based handwritten question solving.
- Integrated AI tutoring using Hugging Face + OpenAI and community access via Twilio/Exotel.
- Built offline caching and adaptive learning paths for personalized experiences.
- **Tech Stack:** React.js, Node.js, Express.js, PostgreSQL, Hugging Face, OpenAI.

Pathfinding Algorithm Visualizer — GitHub

- **Problem:** Most pathfinding visualizers don't allow comparing two algorithms on the same maze, and they lack pause/play/rewind controls for step-by-step viewing.They also do not provide analytics like visited nodes, execution time, or path length, making it hard to evaluate algorithm performance.
- **Solution:** Built an interactive visualizer that supports side-by-side algorithm comparison, adds full pause/play/rewind controls, and provides real-time analytics (visited nodes, execution time, path length) to clearly understand and evaluate algorithm performance.
- Visualizes Dijkstra, A*, BFS, and DFS with smooth animations.
- Includes multiple maze generators: Random, Recursive Division, Vertical/Horizontal, and Spiral.
- Supports drag-and-drop start/end nodes and wall drawing for custom mazes.
- Provides Comparison Mode to run two algorithms on the same maze.
- Full playback controls: Pause, Play, Rewind, and Timeline Scrubbing.
- **Tech Stack:** React.js, TypeScript, Vite, Tailwind CSS, Radix UI, Shadcn UI, Recharts.

Technical Skills

- **Programming Languages:** C++, C, Java, SQL, JavaScript
- **Frontend:** HTML, CSS, Tailwind Css, JavaScript, React.js
- **Backend:** Node.js, Express.js
- **Database:** MySQL, PostgreSQL
- **Tools:** Git, GitHub, Postman, Hugging Face, OpenAI, Figma