Shubham Inavolu

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Education

University of Massachusetts - Amherst Amherst, MA
Bachelor of Science - Computer Science *Graduation: December 2025 (Masters: May 2027)*

Achievements: Deans List, John & Abigail Adams Scholarship, Presidential Service Award

Relevant Coursework: Object Oriented Programming, Data Structures, Computer Systems Principles, Reasoning Under Uncertainty, Programming Methodology, Intro to Computation, Design of Algorithms, Artificial Intelligence, Machine Learning, Applications of Data Management, Web Programming, Computer Networks, Linear Algebra, Statistics & Probability, Multivariate Calculus

Skills

Programming Languages: Java, Python, JavaScript, TypeScript, C, C++, Golang
Web Development: React, Node.js, Express.js, Next.js, Tailwind CSS
Backend & Database: PostgreSQL, MongoDB, Firebase, AWS, Spring Boot
AI/ML: Pandas, NumPy, Scikit-learn
Testing & DevOps: JUnit, AWS Lambda, PM2

Experience

- **Software Engineer: *Java, Spring Boot, MongoDB, Redis, AWS Lambda*** November 2024 - November 2024
  Hack UMass Hackathon: Smart Scheduler *Amherst, MA*
  - Optimized Java backend services, improving system efficiency and reducing API response times by 21% through caching mechanisms and optimized query handling.
  - Developed and maintained RESTful APIs, ensuring seamless frontend-backend communication while implementing robust data structures and algorithms for performance enhancements.
  - Collaborated in Agile sprints, contributing to code reviews, debugging, and sprint planning, while utilizing GitHub for version control and JUnit testing (95%+ coverage) for reliability.
- **Software Engineer: *Python, NumPy, PyGUI*** September 2022 - March 2023
  Formula SAE Club Team *Worcester, MA*
  - Developed a real-time dashboard to display telemetry data using PyGUI, allowing engineers to analyze vehicle performance and detect inefficiencies.
  - Optimized data pipelines using NumPy, reducing processing time by 30% and improving insights on brake efficiency, acceleration, and handling.
  - Designed a visual tool that mapped telemetry data to track sectors that contributed to a 15% lap time reduction through data-driven adjustments.

Projects

- **NavAIgate - AI Travel Planner (Live)**: *React, Node.js, Express.js, Firebase, Gemini AI, Vercel, Tailwind CSS*
  - Built a microservices-based full-stack AI-powered trip planner using Gemini AI to generate personalized itineraries based on user preferences.
  - Integrated Google Places API and Firebase Authentication, scaling to 35+ users and 150+ AI-generated itineraries.
  - Reduced API response times by 30% using Axios caching and deployed on Vercel and Firebase Functions for scalability.
- **Project Management Dashboard**: *Next.js, Node.js, PostgreSQL, AWS, Tailwind CSS, Cognito*
  - Developed a scalable project management tool with CRUD operations, task prioritization, and Gantt chart visualization.
  - Engineered horizontal scalability with PM2 clustering, AWS Auto Scaling, and distributed databases, ensuring high availability.
  - Reduced API latency by 40% with caching and rate limiting while integrating AWS Cognito for secure authentication.
- **Chess With AI Opponent**: *Java, Swing, JUnit*
  - Built a Java-based chess engine with an interactive Swing GUI and FEN support for saving/loading games.
  - Implemented AI opponent using minimax with alpha-beta pruning, evaluating 200+ board states per turn in under 500ms.
  - Optimized search efficiency with Zobrist hashing, reducing redundant computations by 40%, and achieved 100% test coverage with JUnit.
- **Connect-4 AI**: *Python, NumPy*
  - Developed a Connect-4 AI using minimax with alpha-beta pruning, reducing evaluated states by 50%.
  - Optimized game state evaluations using vectorized NumPy operations, making AI computations 3x faster.
  - Implemented heuristics-based move prediction, achieving 70% accuracy in anticipating player strategies.