Pranit Reddy

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Education

University of Wisconsin-Madison Madison, WI

B.S. Computer Science, B.S. Mathematics, B.S Statistics *Expected May. 2028*

Relevant Coursework: Algorithms, Data Structures, Database Systems, Linear Algebra, Linear Optimization, Probability Theory, Stochastic Processes, Matrix Methods in Machine Learning, Big Data Systems, Game Theory & Learning, Machine Learning.

Experience

IBM San Jose, CA

Software Development Intern (Fall Co-op, Incoming) *August 2026 – Dec 2026*

Essert Inc. Santa Clara, CA

Software Development Intern *June 2025 – August 2025*

- Led development of a semantic mapping platform aligning controls across SOC 2, NIST 800, and ISO frameworks, reducing manual cross-framework analysis time by 55%.
- Built scalable embedding-based similarity search and ranking infrastructure achieving 85%+ precision, enabling automated high-confidence mapping of thousands of customer evidence items to control requirements.
- Developed low-latency backend APIs and data pipelines for ingestion, versioning, and retrieval of mappings, supporting real-time compliance workflows.
- Delivered Angular features enabling customers to review, validate, and override automated control mappings, integrating ML outputs into human decision processes and increasing auditor confidence.
- Drove improvements in mapping consistency, automation coverage, and operational readiness across the platform.

Summer Intern Remote

Create Circles (nonprofit) *June 2024 – August 2024*

- Implemented Twilio SMS API workflows to support automated notifications and two-way messaging with skilled-nursing facilities (SNF)
- Assisted with general logistics and administrative tasks, including organizing volunteers and communicating with SNFs

Projects

High-Performance Chess Engine *C/C++*

- Built a high-performance chess engine to explore advanced search optimization techniques. Achieved 160M nodes/second through magic bitboards and move ordering, implementing negamax with alpha-beta pruning.
- Built and perft-validated move generation through depth 7 (3.2B positions) matching reference engines, verifying correctness of complex bitboard logic.
- Reduced sliding-piece computation cost by 8× via precomputed attack tables and cache-efficient data structures.

Interactive Reinforcement Learning Sandbox *Python, NumPy, Streamlit*

- Built an interactive RL sandbox to validate tabular Q-learning convergence in sparse-reward gridworlds, isolating exploration-exploitation tradeoffs and convergence behavior across reward regimes.
- Implemented tabular Q-learning with epsilon-greedy exploration and configurable hyperparameters, enabling controlled experimentation on gridworld environments of varying complexity.
- Developed Streamlit tooling for real-time environment editing, resettable training runs, and side-by-side policy visualization, accelerating hypothesis testing and reinforcement learning intuition-building.

Technical Skills

Languages: Python, Java, C/C++, Scala, SQL, JavaScript, Bash, R, HTML/CSS, Rust, Go
Frameworks & Tools: FastAPI, Flask, Node.js, React, Angular, Streamlit, JUnit, WordPress, Material-UI, REST APIs, Docker, Kubernetes, Apache Spark, Twilio
Databases & Cloud: PostgreSQL, MySQL, Redis, AWS, GCP
Machine Learning: PyTorch, TensorFlow, scikit-learn, Hugging Face, Keras, embeddings, semantic search, retrieval & ranking, RAG, ML pipelines
Developer Tools: Git, Linux, CI/CD (GitHub Actions), VS Code, Visual Studio, PyCharm, IntelliJ, Eclipse
Libraries: NumPy, pandas, Matplotlib, OpenCV