KEVIN CHANDRAN
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SUMMARY

Software engineer with expertise in designing and implementing scalable Artificial Intelligence systems, relational databases, and modular software architectures. Proficient in Python, Java, Node.js, and database management, with a strong focus on object-oriented design, parallel processing, and data pipeline automation. Passionate about problem-solving through innovative and efficient solutions.

EDUCATION

Johns Hopkins University
Master of Science, Computer Science, Whiting School of Engineering
Expected Graduation: May 2026 | Artificial Intelligence Focus
Virginia Polytechnic Institute and State University, Blacksburg, VA
Bachelor of Science, Computer Science, College of Engineering
Graduated: May 2023 | Minor in Music

EXPERIENCE

Software Engineer (Contractor), Cspeed Inc. | Palo Alto, CA | Dec 2023 – March 2025

- Designed, implemented, and maintained a relational database to store and manage chip testing data, ensuring efficient data retrieval and analysis through containerization of MySQL and phpMyAdmin via Docker.
- Developed a full stack, modular, object-oriented Python software infrastructure from scratch to control chip testing environment, enabling seamless integration of test instruments and streamlined testing workflows.
- Implemented a thread pool for multi-threaded execution of instrument operations, significantly reducing testing time by enabling simultaneous instrument usage in test automation.
- Created automated pipelines for uploading chip testing data to the database, improving data collection efficiency and accuracy.
- Used JMP to perform chip testing data analytics and data visualization, providing actionable insights for improving chip performance.

Technical Intern, Cisco Systems, Inc. | San Jose, CA | May 2022 – August 2022

- Built a Node.js application using Zuora's AQUA API to enable customizable queries in MongoDB, delivering finance-related data to employees via a Webex Chatbot.
- Configured Webex spaces to receive query results, improving accessibility to critical financial information.

Technical Intern, Cisco Systems, Inc. | San Jose, CA | May 2021 – August 2021

- Worked in a Scrum team to develop an end-to-end tax refund feature for a Webex Teams finance bot for customer needs using Node.js, allowing customers to document refund requests through a chatbot interface.

Technical Intern, Cisco Systems, Inc. | San Jose, CA | May 2020 – August 2020

- Worked in Cisco DevOps, Designed and implemented a Java API for Cisco's e-commerce web application, enhancing functionality and user experience, and integrated into the CI/CD pipeline via Jenkins for continuous builds and testing.
- Created a risk management automation tool to resolve recurring vulnerabilities in Java files, deployed across multiple Git repositories.

RESEARCH EXPERIENCE

Researcher, Intuitive Computing Lab, Johns Hopkins University

- Applied Principal Component Analysis on windowed sensor data to uncover dominant patterns in emotional expression.
- Visualized PCA outputs and generated explained variance plots and knee plots to determine optimal feature dimensionality reduction.
- Results will inform downstream modeling in affective computing and human-robot interaction research.

NOTABLE AI PROJECTS

Reinforcement Learning with Q-Learning and SARSA

- Implemented and analyzed Value Iteration, Q-Learning, and SARSA agents in a non-deterministic grid-based racing simulator, evaluating their adaptation to probabilistic transition failures and safety constraints.
- Engineered and tuned hyperparameters (learning rate, discount factor, exploration schedule) via grid search, achieving up to 60% faster convergence and improved stability in model-free algorithms across three distinct racetracks.
- Demonstrated how on-policy and off-policy methods respond to unexpected state transitions through distinct crash handling variants
- Visualized and interpreted learning curves to demonstrate trade-offs in convergence speed, variance, and sensitivity to exploration

Decision Trees for Classification and Regression

- Implemented and evaluated decision tree models with reduced error pruning for classification and regression datasets
- Analyzed pruning effects on model performance, demonstrating improved generalization in regression tasks through reduced MSE (mean squared error)
- Proprocessed datasets by encoding categorical variables and removing non-predictive features, evaluated with 5x2 cross-validation

Neural Networks with Autoencoder Pretraining

- Developed and compared linear/logistic regression performance with feedforward neural networks and autoencoder based networks implemented from scratch across classification and regression datasets
- Conducted systematic tuning of hidden layer dimensions and encoding fractions using 5x2 cross-validation to optimize architecture
- Demonstrated that autoencoder pretraining improves classification accuracy on nonlinear datasets while linear models excel in regression tasks

SKILLS

- **Programming Languages:** Python (PyTorch, TensorFlow, Scikit-learn, Pandas, NumPy), Java, Node.js, C/C++, React JS, R
- **Databases:** Relational Databases (SQL), MongoDB, MySQL, phpMyAdmin, ETL, Statistics, Excel
- **Tools & Frameworks:** JMP, Git, Docker, Kubernetes, AWS, REST APIs, Postman, Tableau, Power BI, Unix, Jenkins, JUnit testing
- **Concepts:** Object-Oriented Design, Parallel Processing, Data Pipelines, Modular Software Architecture, Agile, Scrum, Clustering
- **Machine Learning:** TensorFlow, LLM for Regression and Classification, Decision Trees (XGBoost), Deep Learning
- **Other:** Linux (Ubuntu, CentOS), Operating Systems, Data Science, DSP, Network Programming, SDLC, BitBucket, Jira, SaaS