Kaloyan Parvanov

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Summary

AI Engineer with a strong background in Applied Mathematics, specializing in the design and deployment of end-to-end LLM-powered systems. Proven experience architecting novel solutions for classifying unstructured enterprise data, building sophisticated semantic search and re-ranking engines, and developing scalable tools for data analysis across diverse business contexts.

Work Experience

Data Scientist Jan. 2025 – June 2025
Invictus Growth Partners *San Mateo, CA*

- Engineered a novel LLM classification framework to systematically prioritize unstructured data from noisy and incomplete sources.
- Built an end-to-end semantic search system using text embeddings and a custom re-ranking algorithm for highly relevant results.
- Architected a scalable insights engine, using a flexible LLM classifier to operate across diverse business datasets.

AI Training Specialist Jul. 2024 – Jan. 2025
DataAnnotation & Outlier AI *Freelance*

- Enhanced AI models by correcting coding and mathematical responses, improving accuracy and reliability.
- Identified and rectified hallucinations in AI outputs, contributing to significant error rate reduction.

Graduate Teaching Assistant Aug. 2021 – May 2024
University of Colorado Boulder *Boulder, CO*

Projects

MathBuddy: AI-Powered Math Tutor | *Next.js, FastAPI, Python* Aug. 2024 – Sept. 2024

- Engineered a full-stack AI tutor utilized by over 200 users, leveraging GPT-4o for interactions and GPT-3.5-Turbo for result extraction and difficulty estimation.
- Implemented serverless architecture with Next.js frontend and FastAPI backend, integrating OpenAI and Wolfram Alpha APIs to enhance problem-solving capabilities.

Tic-Tac-Toe with Alpha-Beta Pruning | *Python, Pygame, NumPy* June 2024

- Developed a Tic-Tac-Toe game featuring an AI opponent using the Alpha-Beta Pruning Minimax algorithm.
- Improved AI decision-making speed by 40% by reducing evaluated nodes, enhancing gameplay experience.

ODE Solution via PINNs | *Python, TensorFlow, SciPy* Oct. 2023 – Dec. 2023

- Engineered and trained a Physics-Informed Neural Network (PINN) to accurately model the damped pendulum problem, demonstrating the successful application of a cutting-edge deep learning technique to solve complex ODEs.

Education

University of Colorado Boulder Aug. 2021 – May 2024
M.S. Applied Mathematics, ***Focus:*** *Data Science & Machine Learning* *Boulder, CO*

Lake Forest College Aug. 2016 – May 2020
B.A. Mathematics, B.A. Economics *Lake Forest, IL*

Honors: Summa Cum Laude, Phi Beta Kappa

Technical Skills

Languages & Databases: Python (Expert), R, SQL, C++, JavaScript
AI/ML: TensorFlow, PyTorch, Scikit-learn, Pandas, NumPy, SciPy, NLP, PINNs
Tools & Web Dev: FastAPI, Next.js, Git, Docker, Power BI, LaTeX