Hrishikesh Bhoomireddy

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EXPERIENCE

KX Systems - AI Product Manager/Engineer   Sep 2024 – Apr 2025
- Drove internal AI/NLP initiatives around **agentic AI**, **coding assistants** and **ML frameworks** for **q/kdb+**, the world's fastest time-series database, powering data-driven AI applications for real-time analytics and high-speed processing.
- Lead the development of features for **kdb.ai**, KX's high-performance vector database, making strategic decisions to outperform competitors. Collaborate with UI/UX using figma and engineering teams to build innovative and user-centric features.
- Code and develop **proof-of-concept (PoC)** solutions like market making using sentiment analysis or anomaly detection for clients in capital markets such as **Millennium**, **Goldman Sachs**, **SMBC** and **ANZ** demonstrating product capabilities.
- Work closely with stakeholders through regular weekly meetings to align product vision with market needs, utilizing Jira to manage epics and track progress effectively.

Rakuten - Machine Learning Intern   Jun 2023 – Aug 2023
- Developed a QA model for a chatbot using **LLMs** that answered 95% of questions related to any company document correctly.
- Analyzed and optimized local LLMs like Llama2, Vicuna, and Wizard with **quantization techniques**.
- Applied **prompt engineering** techniques and **vector databases** to provide accurate responses to inquiries.
- Worked with **low hardware compatibility**, achieving highly accurate results and a quick response time of 1-2 seconds with just **12GB GPU's**.
- Presented chatbot capabilities to **Rakuten's CEO** to demonstrate potential **generative AI** applications in customer service.

AlphaICs - Artificial Intelligence Intern   Jun 2021 – Aug 2021
- Improved object detection model mAP by 5% through **data augmentation, optimizer** and **hyper-parameter tuning** for the new AI chip under development.
- Profiled **object detection (Yolov4)** and **image classification (AlexNet)** model performance to identify bottlenecks and integrate memory optimization algorithms for fast deployment of models.

Aeronautical Development Agency - Machine Learning Intern   Mar 2021 – May 2021
- Engineered an aircraft health monitoring system by **data preparation, data reduction** and **feature extraction** of flight sensor data which predicted damage in real-time.
- Data preparation consisted of methods like **removing outliers, scaling** and **normalization**. Reduction of data with high accuracy for feature reconstruction was done using **PCA**.
- **Correlation techniques** and ML algorithms like **Random Forest** were made use of for feature extraction.
- Reduced aircraft downtime by 12% through predictive maintenance system using **ANN, Regression models and KNN.**

ENGINEERING PROJECTS

Commodities and Forex Trading Bot
- Created a trading bot utilizing various **mathematical models** and strategies to achieve higher returns compared to traditional long holding positions over a time period.
- Implemented strategies that leverage concepts like **Mean Reversion**, **Contrarian**, **Moving Average** and **DNN**.

EEG Signal Seizure Detection
- Implemented a ML pipeline to important extract features and predict seizures in children and young adults.
- Important features were extracted using methods like **Independent Component Analysis**, **Wavelet Packet Decomposition** and **Fast Fourier Transform**.
- Predictions for detecting seizures was accurately done using ML models like **LSTM**, **SVM** and **CNN**.

Image Classification Model Optimization
- Refined ImageNet classification accuracy by 9% through hyperparameter tuning and architecture changes to ResNet50.
- Leveraged **batch normalization, dropout** and **depthwise separable convolutions** to optimize model.

Adversarial Attacks on Image Recognition
- Generated adversarial examples to fool ResNet50 image classifier using **gradient ascent techniques.**
- Achieved 95% misclassification rate through imperceptible perturbations demonstrating vulnerability.

EDUCATION

Santa Clara University - Santa Clara, CA   Sep 2021 – Dec 2023
Master of Science in Computer Science and Engineering
Relevant Courses: Computer Vision II, Brain Computer Interface, AI Creativity, Pattern Recognition & Data Mining

MS Ramaiah Institute of Technology - Bangalore, India   Aug 2017 – Jun 2021
Bachelor of Engineering in Computer Science and Engineering

SKILLS

Languages: Python, JavaScript, C,C++, SQL, Flutter
Machine Learning: Data Analysis, Feature Engineering, XgBoost, Random Forest, KNN, Regression, Numpy, Pandas
Deep Learning Libraries: Keras, ONNX, PyTorch, Hugging Face, TensorFlow, Gensim, Scikit-Learn, Langchain, TensorRT.
Database: Relational - MySQL; Non-Relational - MongoDB.