Raj Pulapakura

Machine Learning Engineer

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Skills

- Python, SQL, TensorFlow, Keras, PyTorch, Scikit-learn, NumPy, Pandas, Matplotlib, Pyplot, OpenCV, ChromaDB
- AWS *ECR EC2 API Gateway Dynamo DB Lambda Athena Glue*, MongoDB, Node.js, Firebase, Docker, JavaScript
- TypeScript, HTML, CSS, React.js, Next.js, REST APIs, GraphQL, MySQL, PostgreSQL, Redis, GCP, Git, GitHub

Work Experience

Algorithm, Melbourne Jan 2024 - Present

Software Engineer

- Designing and implementing interfaces and APIs with payments infrastructure using modern web development technologies including Next.JS and JavaScript, working on both frontend and backend.
- Developing Python scripts to process geospatial and agricultural data from AWS S3 cloud into reports.
- Engineering pipelines to log user activity through AWS S3 and AWS API Gateway for customer support.
- *Next.JS, TypeScript, JavaScript, AWS S3 API Gateway S3 ECR Athena Glue Lambda, Python, Stripe, Firebase, Git*

Project Work

Real-Time Gesture Detection Dino Game, code, video

- Developed a replica of the Chrome dinosaur game with Python, where the jump action is controlled through hand gestures captured through the webcam in real-time.
- Employed OpenCV and NumPy for real-time image processing, and TensorFlow to collate a custom image dataset and develop a real-time object detection model reaching precision of up to 97%.
- Improved inference time by 70% of baseline through iterative model optimization, while balancing detection accuracy and FPS through periodic detections, to ensure a smooth playing experience.
- *Python, TensorFlow, OpenCV, NumPy*

Image Search Engine, code, web, video

- Engineered a full-stack website with Next.js, TypeScript and Vercel, enabling users to easily find similar images.
- Implemented drag-and-drop functionality, a beautiful grid layout, and sidebar navigation and animation.
- Deployed a PyTorch computer vision model through a REST API integration backend built with BentoML and hosted using automated Terraform infrastructure for AWS API Gateway and AWS Lambda.
- Drove backend latency down by 20% of baseline through optimization of model architecture.
- *Next.JS, TypeScript, Vercel, Tailwind CSS, PyTorch, REST API, BentoML, TerraForm, AWS API Gateway, AWS Lambda*

Temperature & Power Consumption Time Series Forecasting Model, model

- Implemented univariate and multivariate time series models for temperature forecasting using Python.
- Achieved 30% better performance than baseline (metric was Mean Absolute Error) by employing advanced machine learning techniques including 1-dimensional CNNs, extensive hyperparameter tuning, Adam optimizer, and exponentially decaying learning rate using TensorFlow.
- Conducted data manipulation, cleaning, preprocessing, analysis, and visualization.
- *Python, TensorFlow, NumPy, Pandas, Matplotlib, Pyplot*

Certifications

- **Database and SQL for Data Science with Python**, IBM — Dec 2023
- **Deep Learning Specialization**, DeepLearning.AI — Dec 2023
- **Advanced Machine Learning on Google Cloud**, Google Cloud — Nov 2023
- **IBM Professional Machine Learning Certificate**, IBM — Sep 2023
- **TensorFlow Developer Certificate**, TensorFlow — Aug 2023

Other

- Active contributor to the open-source packages TensorFlow and Scikit-learn.
- Write a technical blog on Medium and post videos on YouTube, sharing my passion for AI/ML.