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Portfolio

Raj Pulapakura

Machine Learning Engineer

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SKILLS

- **Languages**: **Python, SQL**, JavaScript, TypeScript, HTML, CSS, Dart, Kotlin
- **Technologies**: **TensorFlow, Keras, PyTorch, Scikit-learn, NumPy, Pandas, Matplotlib, Pyplot, OpenCV, MySQL, PostgreSQL, MongoDB, AWS, GCP, Node.js, GraphQL, Redis,** React.js, Next.js, Express.js, REST APIs, Flutter, Firebase
- **Other**: **Git, GitHub**, Docker, Kubernetes, JSON, Figma

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

PROJECTS

Image Search Engine

- Developed a full-stack website with **Next.js/TypeScript** enabling users to drag and drop, and find, similar images.
- Fine-tuned a computer vision neural network with **PyTorch** on **30 MB** of data to identify similar images.
- Drove latency down by **20%** of baseline through MobileNet architecture and optimization of backend infrastructure.
- Deployed model to production through **REST API** backend built with **BentoML** and hosted using automated **Terraform** infrastructure for **AWS API Gateway** and **AWS Lambda**. Deployed frontend to **Vercel**.

Real-Time Gesture Detection Dino Game

- Developed a replica of the chrome dinosaur game with **Python** and **PyGame**, where the jump action is controlled through hand gestures captured through the webcam in real-time.
- Employed **OpenCV** and **NumPy** for real-time image data processing and **TensorFlow** to develop a real-time object detection model reaching precision of up to **97%**.
- Improved inference time by **70%** of baseline through model optimization to ensure smooth playing experience.

Temperature Time Series Forecasting Model

kaggle

- 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 1-dimensional CNNs, extensive hyperparameter tuning, Adaptive Moment Estimation optimizer, and exponentially decaying learning rate to develop a robust neural network, using **TensorFlow**.
- Utilized **NumPy** and **Pandas** for data manipulation, preprocessing, and analysis, and **Matplotlib** and **Pyplot** for creating interactive graphs.

Comment Toxicity Checker

kaggle

- Used **TensorFlow** to train a Natural Language Processing text classification model on **55 MB** data, **TensorFlow Lite** to efficiently store model shards in repo, and **TensorFlow JS** to dynamically serve model on frontend.
- Developed a full-stack application using **Next.js/TypeScript** and **TailwindCSS** that allows users to get a toxicity rating on their text, deployed with **Vercel**.

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 software development, AI, and machine learning.
- 5 years consecutive public speaking champion, won Victorian Debating Competition