Saiprasath Gopinath

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Employment Profile

Highly Skilled Backend and AI engineer with 4+ years of experience in developing end-to-end solutions with computer vision[models for object detection, classification, recognition, OCR] and NLP[NER, classification] for real-time applications. Proficient in functional and low-level programming. Interested in building end-to-end solutions using AI frameworks.

Employment History

May 2021 - Jan 2024
Intellect Design Arena, Chennai - *Computer Vision Expert*

- Built a pipeline with multiple custom AI models for extracting required information from government-issued documents with an overall accuracy of 98% and reduced the processing time by 3x using parallel processing.
- Trained and built generic NER models that extract required entities from emails at 97% in accuracy.
- Trained an object detection model and built an entire module for extracting information from tabular image data and converting to a structured data format and achieved an accuracy of 95%.
- Built a module and an algorithm that reduced the price of Textract by 37% by minimizing the API hits.
- Built an entire module to extract entities from documents by integrating custom computer vision and NLP models.
- Built a custom architecture for siamese network from scratch approx 3.5MB in size, to classify 60 document categories and achieved 81% accuracy.

Feb 2021 -May 2021
Entropik Technologies, Bangalore - *Computer Vision Engineer*

- Created a custom autoencoder to generalize and reduce code complexity by replacing pre-processing steps.
- Built a pipeline, API and models to detect the emotion and AUs[Action Unit] activated in the face.
- Built a function to verify and move annotated data to the right folder.

May 2019 -June 2020
DeepQuanty Artificial Intelligent Labs, Chennai - *Computer Vision Engineer*

- Developed generic models and solution pipeline for cleaning, detecting, extracting and verifying the required fields in the cheque image and achieved an overall accuracy of 93%.
- Built the AI-module that verifies government approved KYC documents.
- Generated synthetic data for classes where there was significant lack in data points.

Personal Projects and Publications

Image Retrieval using Autoencoders[https://github.com/saiprasathgopinathan/Image-retrieval-using-AutoEncoders**]**

- First the features of images were extracted using a VGG-16 architecture and populated with imagenet weights.
- Using K-means clustering the images were annotated and moved to their respective class folders.
- Autoencoder containing 5 CNN layers in the encoder phase and 5 CNN layers in the decoder phase was trained and used for the feature extraction process.
- The output of Autoencoders were flattened and KNN was trained using those features with cosine similarity as the metric.

Performance Comparison of Machine Learning Algorithms for Malaria Detection Using Microscopic Images

- Published on International Journal of Research and Analytical Reviews[https://ijrar.org/papers/IJRAR19SP014.pdf]
- The dataset consisted of approx 2700 blood smear images - 75%[2027 images] used for training and 25%[676 images] used for testing.
- The goal was to develop an automated malaria detection system that performs well on detecting the plasmodium, while neglecting the leukocytes and other parasites in the blood.
- Statistical representation of shapes were preferred rather than the color of the blood smears, for better performance.
- Feature engineering being an essential step, features from connected components and images with different thresholds are passed for the model's learning.

Education

- Bachelor of Technology, Sastra University(2011 - 2016)**,** Thanjavur, India
- Master of Technology, Amrita University(2017 - 2019)**,** Coimvatore, India
- Advanced Diploma, Centennial College(2024 - present)**,** Toronto, Canada

Skills

- Programming Languages: Python, Java, C#, C++
- Back-end: .NET Core
- Others: MySQL, Git, PL/SQL
- AI Frameworks: Keras, Tensorflow, Pytorch, OpenCV, PIL, Spacy, Sklearn, Numpy, Pandas, Matplotlib, Transformers