ASHUTOSH KUMAR MANDAL

AI Engineer

ashutosh.iitg.16@gmail.com | +91-9435685646 | Bengaluru, India | Portfolio | ashutosh-iitg | ashutosh-iitg

EXPERIENCE

AI Engineer

Aug 2020 – Ongoing

Valuence Technologies

Tokyo, Japan (Remote)

Auto-Assessment Platform

- Designed and developed an end-to-end AI workflow for product detection and classification using state-of-the-art CNN models. Developed and trained new architectures like Branched CNN on Resnet backbone to identify product details for luxury products.
- Modeled a deep learning algorithm to detect objects in real-time with a precision of 97% resulting in a three-fold efficiency rise of staff in query identification with high ROI.

Tech Stack: YOLO, ResNetV2, LGBM, Docker, PyTorch

Sensitive Data Redaction

- Crafted an innovative pipeline for automated redaction of personally identifiable information in product documents using OCR, multilingual text embedding model and SVM leading to increased efficiency and data protection accuracy.
- Engineered an AI solution to mask sensitive information in product images using instance segmentation and image processing. Developed an image processing framework using pixelation to mask the sensitive area such that the edit blends naturally with the original image. Achieved an mAP(50-95) of 0.776 in masking sensitive areas.
- Implemented a diffusion model to generate high-quality images of watch dials. Further, improved it as a guided diffusion model to selectively edit specific parts of the dial, enhancing customization capabilities.

Tech Stack: BERT, SVM, EC2, Docker, Pytorch, Python

Conversational Chatbot

- Built a RASA-based AI chatbot assistant using several transformer encoders and optimized its performance by tuning various hyperparameters leading to a 95% accuracy in intent classification.
- Integrated the RASA chatbot with the Slack platform that reduced the man hours to 20 hrs/month handling FAQ based queries. Configured bilingual support for English & Japanese language, enhancing system's accessibility and usability.

Tech Stack: Rasa, BERT, Python, Docker, MongoDB

Employee Work Hour Management System

- Led a team of Software Engineers to develop a responsive web application to efficiently store and manage the working hours of over 150 remote employees. Added feature to generate monthly reports in PDF format.
- Proposed a role-based access control system to maintain operational efficiency and data security. Deployed in production replacing Google sheets, thereby reducing complexity and efficiency.

Tech Stack: Vue.js, Laravel, MySQL, PHP, CSS, Chart.js

PROJECT

PlantCLEF - Plant Genus and Species Classification GitHub

- Engineered a Multi-View CNN architecture that integrates multiple images of the same plant to improve classification precision. Achieved a 10% increase in classification accuracy compared to traditional single-view CNN models.
- Implemented and fine-tuned Resnet and EfficientNet backbones to enhance feature extraction capabilities.

Kaggle: Predict the Energy Behavior of Prosumers

- Conducted comprehensive EDA and developed data preprocessing pipelines, leading to effective feature selection and handling of data issues.
- Experimented with various gradient-boosted models, achieving optimal performance with an ensemble of LightGBM models. Achieved MAE of 65.96 leading to a top 5% finish in private leaderboard.

EDUCATION

Indian Institute of Technology Guwahati

Jul 2016 – Jun 2020

Bachelor of Technology in Engineering Physics (7.76/10.0)

Assam, India

SKILLS & EXPERTISE

Area of Expertise: Generative AI, NLP, Image Processing, Computer Vision, Data Science, Predictive Modelling
Programming: Python, C++, SQL
Cloud Services: AWS SageMaker, AWS ECS, S3, AWS ECR, EC2
AI Tools/Libraries: FastAPI, Streamlit, Flask, PyTorch, Tensorflow, Keras, OpenCV, HuggingFace
Miscellaneous: OpenAI, Langchain, Docker, Git, DBMS