

SARATH SAHADEVAN

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Skills

- Python | Machine learning | Computer vision | NLP | LLMs | Langchain | React | MongoDB | Flask | NoSQL | Git | Docker
- AWS | Cloud Computing | CI/CD | MLOPs | MLFlow | Sagemaker | Lambda | Glue
- Microservices | Distributed Systems | Frontend | English, Malayalam – All professional proficiency or above

Experience

- | | | |
|--|-------------------------------------|---|
| Senior ML Engineer | <u>Quantiphi</u> | 06/2021 - Current |
| <ul style="list-style-type: none">• Worked on Azure MLOPs, Computer vision and Data science• Projects : Implemented various MLOPs use cases for computer vision.• Automatic onboarding (production): onboarding verification process has been automated using id card data extraction using OCR and entity identification using custom trained layoutxlm. Handled daily input data of more than 60k documents.• Handwritten recognition: Handwritten data in children's progress card has been extracted using OCR and custom entity extraction model.• Price optimization(production) : Built forecasting model using VAR, churn model and an self optimization model for the price optimization of a telecom client. | | |
| AI Engineer | <u>Innovation Incubator</u> | Trivandrum, Kerala 05/2019 - 11/2020 |
| <ul style="list-style-type: none">• Worked on Computer vision projects Projects: Computer vision : face detection and recognition, image retrieval, image segmentation, video analytics.• Tools used dlib, opencv, keras and tensorflow.• CNNs, U nets and transformers were used.• OCR : Detecting and extracting texts using custom text detection and recognition models, CRAFT, CRNN Deploying python flask applications on ec2 and automating ec2 deployment using python boto3 library from AWS.• Deployed solution handled huge volume of data and saved average of 15k dollars a month by using custom OCR. | | |
| Software Engineer | <u>Ernst & Young</u> | Trivandrum, Kerala 02/2018 - 04/2019 |
| <ul style="list-style-type: none">• Worked on Both AI and Blockchain.• Projects: Data Science: Blockchain token purchase forecast, forecast and retention analysis, digital marketing effectiveness analysis and optimization.• NLP : Chatbots on messenger.• Using spacy and NLTK, Pattern matching and extraction, sentiment analysis.• RNN LSTMS Blockchain: Distributed AI, Ethereum Dapps. | | |
| Data Science, Intern | <u>Elkanio Research Labs</u> | Trivandrum, Kerala 10/2017 - 01/2018 |
| <ul style="list-style-type: none">• Elkane : IOT product development with integrated intelligence | | |

Education

- | | | |
|---|----------------------------------|---|
| Bachelor of Technology | <u>Calicut University</u> | Thrissur, Kerala 07/2013 - 05/2017 |
| <ul style="list-style-type: none">• Bachelors in Computer Science and Engineering | | |

Projects

Custom Optical character recognition

Custom OCR has been implemented using CRAFT and CRNN.

We were able to extract and recognize texts with high noise scanned images and speed of the process improved by batching the images in CRNN model.

Question answering from Document using GPT-4

Implemented a question-answering system using LangChain framework, in a state-of-the-art large language model GPT-4. FAISS is used as vector database. Used Langchain Agent for searching purpose.

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Stable Diffusion for Text-to-Image with ControlNet

Implemented state of the art stable diffusion model to translate text to image.
used stable diffusion, controlnet along with LLM to generate text and according images.

Cost optimization

To optimize the cost of bucket of users in telecom industry, we have built an forecasting and churn model along with self adjusting user optimizing model. [Using this solution client saved up to \\$100K a month](#). Used VAR model for forecasting and optimised the code using Data Structures.

Text to Youtube Video

Built a pipeline to create a youtube video from the text using the combination of Langchain, GPT-4, Replicate, Bark and Stable diffusion models. SequentialChain is used to handle multiple i/p and o/p also used TransformChain for multiple async Replicate calls.

Automatic Document Clustering

document clustering is implemented using siamese networks by making the document to image cube. After vectorizing process is completed agglomerative clustering is carried out for grouping. single shot learning improved the hectic document clustering process to be more fast and reliable.

Face recognition

Face detection and recognition using dlib.
This is a multi stage process in which we detect, align and recognize faces from the image and video feeds.
We added tracking to this to improve the stability and speed of the process.
We also made version using aws rekognition which will send the images to aws services and give back the face matches.

Demand forecasting and price optimization and Route Optimization

This project is implemented by using machine learning for forecasting and linear programming for optimization.
We make use of historical data to predict the demand which is used as a constraint in linear programming to do the price optimization Route optimization using Google's OR-Tools.

Title Question Answer selection

As part of Microsoft AI challenge 2018 we did a deep learning model to do answer selection for a given query from among 10 passages given.
We used bm25, learning to rank models and deep learning models.
Siamese networks, sequence models and sequence models with attention were all different models we tried.
We were placed top 50 in stage one and thus we were selected to the final stage of the competition.
