Purnasai Gudikandula

[Linkedin](#) | [Medium](#) | [Gmail](#) | purnasaigudikandula@gmail.com | 9014247977

Work Experience(4.7 yrs):

Senior Data Scientist - Soulpage IT Solutions(Award Winning Startup from Indian Gov)

- Joined as the Founding Data Science team member and progressed to Senior Data scientist. Designed, Developed and Built Multiple products and Pipeline for Multiple Use Cases. Worked with prominent clients like **Apex, Cyient, Pixsy, Qualetics, Devfi, Yitsol, konaai** and **InHouse** products. Worked on Machine learning, Deep learning, Computer vision, Natural language processing and more.
- **I Interact with Clients, Design and Develop End-to-End AI pipelines from scratch. I Manage & help the team to build and maintain the solutions.**

Skills:

- Machine learning
- Data Science
- Deep Learning
- Image classification
- Object Detection
- Semantic segmentation
- Instance segmentation

- Transformers
- NLP
- Document OCR
- PyTorch
- Pytorch lightning
- Github
- Weights and Biases

- Huggingface
- Python
- Mixed Precision
- Data clearing
- Data preprocessing
- Feature engineering
- ExploratoryData Analysis

1. PRODUCTS:

[DEEPLOBE.AI](#)(A NO-CODE ML/Deep learning Platform As A Service):

- Led the team, built the product from End to End. This is a No code Deep learning Training,testing and logging platform. It has **Image classification(ResNet), Object Detection(Faster-RCNN), Semantic segmentation (Mask-RCNN), Instance segmentation(FCN) and Document Analysis(Transformers)** for OCR modules.
- Built from scratch using PyTorch, pytorch lightning, transformers in all modules & Lead the team from Data collection, Data annotation, Data preprocessing, Data augmentation, Model building with performance metrics.
- Collaborated with the Dev team to assist them in building Annotation tools, integration of ML and DL pipelines for the product. Monitored the Testing team in product testing.

[DFLUX.AI](#)(A NO-CODE Machine Learning Automation As A Service):

- This is a **ML Automation platform** which takes data as input and gives you the predictions and model to predict on a new dataset. Helps clients to upload their own data, build models, and do inference.
- Have lead the project, built it from scratch, monitored the testing and finally deployed the product.

2. CLIENT PROJECTS:

SEC IXBRL TAGGING for APEX:

- Solely built the product from start to end. IXBRL is a reporting language to report financial documents like 10-k and 10-Q. CA Professionals are involved to carefully tag financial entities before filing the document in SEC.
- Implemented Bert model to identify Tags in Cover Page, Tables, and paragraphs more than 500 tags using HTML as input. This automation helps CA professionals to ease their work at Tagging time before they upload to the SEC platform.

COMPLEX DOCUMENT TEXT EXTRACTION for [Cyient](#)(Fortune 500 companies as Clients):

- Proposed savings of 200k USD using semi automation with human in loop to extract the key fields from PDF.
- Built **End-to-End Advanced Form OCR** tool including pre-processing, data augmenting and postprocess.
- Implementing and modifying a Deep learning architecture to suit the business case.Used **SOTA Transformers Model** for Documents.

AUTOMATIC PAR SCORING of DENTAL ALIGNMENT and ANALYSIS for [Qualetics](#)

- Qualetics approached us with a Medical **domain** related problem statement to analyze the Dental samples and to generate Conclusive Report summary on the samples using PAR Scale(A scale used by dentists to measure alignment). With Our Approach time to generate reports **reduced from 3 Days to 10Min.**
- We get Upper Jaw, Lower Jaw, Right Buccal and Left Buccal samples. We used **Instance segmentation** to detect Each tooth, **keypoint detection** to detect their edges. Distance metric to measure their Alignment, Converted them to Par scale and Generated an excellent report. Sample report [here](#).

3. Deep Learning POC'S:

PDF Accessibility for Apex:
- Pdf contains multiple elements like title, text, table, image, image caption, header, footer and more. Devices like Adobe Reader can automatically tag these entities, so PDA devices help blind people to access the knowledge in PDFs.
- Currently working on this use case called **Document Layout Analysis** where we use **VGT, Docxchain, DIT** to automatically find these elements and generate XML to load in PDA devices.

MULTIMODAL LLM RAG Application:
- Working on this use case to retrieve information from the pdf, xlsx, images using **LLM** s like **Mistral, DeciLM, Laama**, and **VLM** like **CogVLM, Qwen** models. Used **Quantized** models to fit in T4 GPU. Used Gradio for Demos. Using Langchain for Retrieval and chunking methods.

FOOTPATH SEGMENTATION and SKELETONIZATION for Cyient.
- The problem statement is of detecting centerline for footpaths of streets, so that the underlying cable monitoring system easily passes through the route.
- We used **Instance segmentation Transformer Models SegFormer** to detect the Footpath, but later to detect the centerline we used Several Traditional computer vision methods with **Skimage, openCV, Skeletonization** to get the centerline and also used different skeletonization methods too.
- Our instance segmentation models have performed very well, but the centerline detection was only accurate 70% of time.

DEVFI(PDF similarity with paragraphs):
- Given these research papers before and after the submission to the research forums, the content in these papers is filtered, modified and fine tuned to suit the forum standards. Once after the modifications, one needs to check for duplicate paragraphs, missing paragraphs.
- Using **AI (Detectron2+ Layout LM+ Publaynet)** this process completes in 5 min unlike earlier 3 hours.

Analytics R&D's:
- DEVFI(Automatic Tweet retrieval and analysis with dashboard).
- Sentiment Analysis for text.
- Text Summarization.
- Text Translation for Reviews.
- Vehicle Review analysis for TVS.
-

Conferences & Achievements::
- Got Shortlisted and Scholarship to attend **ICML(International Conference on Machine learning)** Virtual Conference and their Workshops Certificate
- Got Selected to Virtual Conference **Eastern European Machine Learning Conference(EEML)** by DEEPMIND Researchers Certificate.
- Participated in **CVIT 5th Summer School on Artificial Intelligence**, IIIT Hyderabad. Certificate
- Member of Judgment Jury to select the Best innovative idea for Open Innovation Challenge at Cyient.
- Has a Blog on ML,DL in Medium with 5K views Every month. These are referenced in Other blogs, Tutorials and Research papers.

Tools and packages used:
- Hugging Face, Streamlit, Gradio, Flask, Python, Pytorch, Langchain, llama index, Jupyter notebook, Transformers, scikit-learn, numpy, pandas, and many more.

Interests and Hobbies:
- Reading Research Papers.
- Publishing blogs.
- Checking out Newly released AI News.