# Syed Abdul Khader

Research Engineer | Vision and Language Model Geek

Email: abdksyed@gmail.com
Phone: +91-7013542783

## SKILLS

**Languages and Frameworks:** Python, SQL, Hugginface, FastAPI, PyTorch, DSPy
**Technologies**: LLMs, Computer Vision, NLP, RAG, Diffusion Models, RestAPI, Docker, Git, AWS, Linux.

## EXPERIENCE

**Surgical AI Lab (MGH, Harvard)** — Boston, MA
*Research Engineer* — April 2023 - Present
- Developed for Binary and Multiclass Video Object Segmentation(VOS) system on surgical video data, achieving sota results, with mean IOU of **92.26%** and **74.43%** respectively.
- Incorporated SAM-Med2D and XMem++ to do auto-segmentation of anatomy and tools on the videos reducing annotation time for each case from **4 weeks to 1 week**.
- Presented two Proof of Concepts, a Vision Language system to generate post-operative reports and summaries using surgical videos and a RAG system to query based on past reports.

**Infinstor** — Remote
*Data Scientist* — June 2021 - July 2022
- Architected end to end Document Understanding pipeline to extract and analyse information from document images using LayoutLM series.
- Deployed an OCR model developed with CNN-LSTM-CTC Loss, to reduce the manual process **turn around time by 90%**.
- SQL Queries and Cloudwatch logs Anomaly detection using LogBERT. Blog post

**Infor** — Hyderabad, India
*Dev Bussines Analyst* — July 2019 - April 2021
- Led the functional integration of Infor ERPs with Microsoft, and Salesforce CRMs.
- Automated Customer Data Migration, reducing migration duration from 2 days to minutes.
- Trained new developers on Python, with a satisfaction score of **97%**

## PUBLICATIONS

- **Thoracic Surgery Video Analysis for Surgical Phase Recognition**. *2nd Workshop on Robot-Assited Medical Imaging, IEEE International Conference on Robotics and Automation*, 2024
- **Medical Surgery Stream Segmentation to Detect and Track Robotic Tools**. *IEEE International Conference on Artificial Intelligence for Medicine, Health, and Care*, 2024
- **Utilizing Artificial Intelligence for Surgical Anatomy and Phase Recognition in Thoracic Surgery**. *IEEE International Conference on Biomedical Engineering Instrumentation*, 2024
- **Automatic Detection of the Pulmonary Artery During Robotic Right Lower Lobectomy Using Deep Learning**. *103rd Annual Meeting of The American Association for Thoracic Surgery*, 2023

## PROJECTS

**nanoChatGPT** — *Project Link:* nanoChatGPT
- Supervised finetuning GPT-2 variants on UltraChat dataset, along with Reward model training on the SFT model with LoRA. Achieved **60-68%** accuracy in reward model training on GPT-2 variants.

**Panoptic Segmentation on Custom Dataset using DETR** — *Project Link:* DETR
- **mAP0.5:0.95 of 61%** for bbox and Panoptic Quality(PQ) of **54.6%** over both things and stuff

## EDUCATION

**Plaksha University** — August 2022 — June 2023
Technology Leaders Program — GPA: 9.53
Awards: Best student commitee and Spirit of Plaksha — Credit standing: Gold Medalist

**JNTUH College of Engineering** — 2014 — 2019
Bachelors in Technology — Percentage: 80