



# SAIKIRAN PUVVADA

 [Portfolio](#)

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## SUMMARY

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Data Science professional with 3.5 years of proven experience delivering successful end-to-end NLP, Voice, and Speech AI solutions in the US Healthcare domain. Adept at understanding user needs and motivations to design intuitive solutions, effectively addressing complex challenges through empathetic communication.

**Currently Looking for opportunities as a Senior Data Scientist / Consultant / AI Product Manager**

## SKILLS

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**AI Modelling:** Pytorch, Tensorflow, Nemo, Kaldi, espnet, SpeechBrain, HF Transformers, LangChain, RAG, LLM Finetuning

**Programming/ Scripting Skills:** Python, JAVA, Bash, ReactJS, VueJS, NodeJS

**Statistical Analysis:** Descriptive Statistics, Hypothesis Testing

**Database:** SQL/MYSQL, MongoDB, DuckDB

**Deployments:** Kafka, FastAPI, Flask, SocketIO, AMPQ, Pub/Sub, Microservices

**Data Scraping and Analysis:** Pandas, NumPy, BeautifulSoup, Selenium, Scrapy

**Data Visualizations:** Tableau, Excel, Matplotlib, Power BI, Illustrator

**Platforms:** Microsoft Office Suite, GCP, AWS, Microsoft Azure

**Version Controlling Tools:** Git/GitHub, BitBucket

**Product Management Tools:** Monday.com, Jira, Confluence, Asana

**Data Engineering Tools:** Docker, Kubernetes, Kafka, PySpark, Pub-Sub, AMPQ 0-9-1, Celery, MLFlow, TensorBoard

**UI/UX - Rapid Prototyping:** Figma, Adobe XD, Gradio, Streamlit

## EXPERIENCE

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### Senior Data Scientist (Speech/NLP) at Edvak Health [Apr 2023 : Present]

- **Real Time Conversation Capture Stack for US Healthcare**
  - Designed and Implemented scalable Conversation Capture Stack for EHR to reduce documentation burden on providers by 50% (Python, SocketIO, sklearn, Pytorch)
  - Led the deployment of the system from scratch, using Websockets to ensure scalability and reliability (Kubernetes, CI/CD, Docker)
  - Guided a 4 member team of junior data scientists in the modelling process, using advanced speech processing techniques and Large language Models(LLM) (SpeechBrain, PyAnnote, Clustering, Role identification, GPT4, DeepSeek, Llama, OpenAI)
  - Successfully Integrated NLP/text dependent role identification techniques to improve on relative speaker confusion rate by 28% in a conversation
- **Front Desk call Automation for US Healthcare**
  - Designed and Implemented Call Automation for US Healthcare with VITS based Text to Speech Synthesis and LLM for appropriate response generation.
  - Designed scalable deployment strategy to handle patient queries over call in place of front desk staff.
  - Utilized LLM's Natural Language Understanding and Natural Language generation capabilities for response generation using prompting techniques.
  - Utilized Large Action Models to perform actions based on patient's conversation flow appropriately.
  - Working with Livekit, Twilio for seamless scalable integration into clinic's existing phone systems
- **Auto-Punctuation and Capitalization Model for US Healthcare**
  - Developed BERT based Auto-Punctuation and Capitalization Model for improving clinical document readability
  - Utilized Data Augmentation/Generation/Scraping techniques to tackle data scarcity (Pandas, Regex, Selenium)
  - Improved punctuations and capitalization performance by 24% over base model using re-defined modelling objective for in-domain transfer learning.
- **Edvak EHR to HL7 FHIR Data Mapping**
  - Spearheaded the Healthcare Data Interoperability Initiatives in the organization to transform internal data representations into HL7 FHIR standard for improved Population Health Management, Care Coordination, and CDSS Services. (Python, MongoDB, HL7 FHIR, CDSHooks)

## • Managerial Responsibilities

- Co-ordinating with Data Science Team and Integration Teams to optimize the work and plan to align towards long term Organisational Business Objectives.
- Managing and Guiding Junior Data Scientists in end to end project life cycle.
- Communicating the with stakeholders to discuss plan/progress.
- Managing and Planning Annotation Activities for Speech/NLP Useases

## Data Scientist (Speech/NLP) at Edvak Health [Dec 2021 : Apr 2023]

### • Automatic Speech Recognition(ASR) for US Healthcare

- Worked on developing Closed Language Model Automatic Speech Recognition Engine for US Healthcare.
- Involves working with Machine Learning Libraries PyTorch and TensorFlow in Python and Kaldi framework for Automatic Speech Recognition (Kaldi, Wav2Vec2, RNN-T, Parakeet, Whisper).
- Setting up near-realtime ASR Inference endpoints at large scale (Socket-io, Kafka, Websockets, RabbitMQ)
- Hyper Parameter tuning the models for better performance (Machine Learning, Deep Neural Networks).
- Handling Raw Audio Data and Processing it to eliminate abnormal data (Sox, Bash, Python, Data Analysis, Pandas, Numpy, Librosa).
- Developing In-Domain Bencharking Test-set for Rapid Model Evaluation.
- Automating Data Collection for Active Learning and Strategizing Data Strategy at Organisation Level.

### • Language Modelling [n-gram] for ASR contextual biasing

- Cleaning and Pre-processing Text Data at large scale (>10GB) for N-gram Language Model training using SRILM/KenLM toolkit(Pandas, Regex, Bash, Python, GNU-Parallel, Dask, OpenRefine).
- Designing/Developing/Managing Pipelines with lexicon filtering and Web scraping for Automated LM Generation and Evaluation (Perplexity, Bash, Cron jobs, Selenium, ScraPy).
- Managing metadata Databases for Data Versioning and Data Lineage (SQL, MongoDB)

## EDUCATION

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**Indian Institute of Technology Madras**

**October 2020 - December 2023**

*B. S in Data Science and Applications*




**Sreenidhi Institute of Science and Technology, Hyderabad**

**July 2016 - June 2018 (Matriculated)**

*B.Tech in Computer Science and Engineering*


## CERTIFICATIONS

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- **Deep Learning Specialization** | T9P329J56AJ8 | Coursera 
- **Machine Learning Engineering for Production (MLOps) Specialization** | 3WEC7TGKXHJN | Coursera 
- **Natural Language Processing Specialization** | JWBBB93TSK7Q | Coursera 

## HONORS / ACHIEVEMENTS / VOLUNTEERING / MENTIONS

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- **Teaching Assistant | Introduction to Big Data  | IIT-Madras (Jan 2024 - Present)**
- **Experience as Freelance Flutter and UI/UX Developer (2018-2020)**
- **Technical Head (campus role at ArtsClub, SNIST) (2017-2018)**
- **Volunteered for Global Entrepreneurship Summit, Hyderabad, 2018**
- **Awardee of Undergraduate National Scholarship by Indian Government (2016-2018)**