

# Vijay Murari Tiyyala

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## EDUCATION

### JOHNS HOPKINS UNIVERSITY

Baltimore, MD

#### MSE Computer Science

Expected 2023

- Relevant course work: Machine Learning, Deep Learning, Data Science, NLP: Self-Supervised Models, Databases, Information Retrieval, Machine Learning System Design, Parallel Computing for Data Science

### VELAGAPUDI RAMAKRISHNA SIDDHARTHA ENGINEERING COLLEGE

Vijayawada, India

#### Bachelor of Technology in Computer Science

2021

## TECHNICAL SKILLS

Programming Languages: Python | Java | C++

Model Training and Deployment: PyTorch | huggingface | accelerate | Distributed Training (SLURM) | Spark | Docker | LangChain

Databases and Operating System: MySQL | Microsoft SQL Server | Solr | Linux

Web & Cloud: Jekyll | PHP | HTML | CSS | XML | Google Cloud | Azure

## EXPERIENCE

### Summer Research Intern

Baltimore, MD

CENTER FOR LANGUAGE AND SPEECH PROCESSING | JOHNS HOPKINS

June 2023 - Present

- Collaborated with Prof. Mark Dredze on a chatbot development, leveraging LLAMA 2 language model trained on 1M+ articles and integrated with a retrieval-augmented generation framework.
- Implemented Apache Solr for data indexing and querying, establishing a streamlined pipeline for training, validation, and inference data preparation.
- Instruction tuned LLAMA2 using PEFT (Parameter Efficient Fine-Tuning) LoRA and deployed the model, demonstrating advanced ML engineering skills.

### Research Assistant

Baltimore, MD

CENTER FOR LANGUAGE AND SPEECH PROCESSING | JOHNS HOPKINS

January 2023 - June 2023

- Strived to advance multilingual machine translation for low-resource medical languages, ensuring accurate translation of medical terms through large language models and Translation system.
- Utilized compound splitting translation statistics to find the most probable translation for a word for continuous improvement and fine-tuning.

### Business Technology Analyst

Hyderabad, India

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July 2021 - July 2022

- Designed efficient SQL procedures for tax data management and optimized data retrieval, achieving a 20% reduction in processing time.
- Enhanced DML script performance by 7% by leveraging SQL and Power BI for in-depth data analysis.

## PROJECTS

### Fine-Tuning Medical Response using Reddit Data, PyTorch, Solr, HuggingFace, accelerate

August 2023 - Present

- Developed and fine-tuned LLM LLama2 aimed at improving medical advice to medical queries by public.
- Employed Apache Solr for data indexing and multi-GPU distributed training for model fine-tuning.

### Self-Instruct for Code Editing, PyTorch

January 2023 - May 2023

- Scraped open source web code-based data and designed novel data augmentation techniques to refine language models for intricate code edits. Fine-tuned CodeLLama on the curated dataset.

### Unsupervised Image Classification with Vision Transformers, PyTorch

January 2023 - May 2023

- Accomplished competitive results against supervised benchmarks by employing transformer-based encoder DINOv2, attaining 86% accuracy on ImageNet.

### BENoAT: Better English Noisy Audio Transcriptions, PyTorch

August 2022 - December 2022

- Built a dual-stage pipeline focusing on enhancing noisy audio transcriptions, utilizing state-of-the-art machine learning techniques.

## ACHIEVEMENTS

- Secured a position in the top 1% among 10,000 participants in CodeChef's Long Challenge and ranked within the top 5% among 96,000 participants in Google Code Jam 2020