Gayathri Ethiraj

● egayu3@gmail.com ● Website: https://gayu-thri.github.io/ ● https://www.linkedin.com/in/gaethira/

EDUCATION

Amrita Vishwa Vidyapeetham University - *Coimbatore, India*
Bachelors in Computer Science & Engineering | June 2021
GPA: 8.31/10.0 (*Distinction*)

Devi Academy Senior Secondary School - *Chennai, India*
CBSE | Computer Science, 2016-2017
GPA: 08.91/10.0 (*Distinction*)

SKILLS

- **Technical** : Python, NLP, LLM, Data Engineering, ITN, ASR, RESTful APIs, HTTP(s) requests, OAuth, SQL, MySQL, Java, C, C++, CCNA(R&S)
- **Tools** : HuggingFace APIs, PyTorch, Tensorboard, Neptune, NumPy, Pandas, GIT, MATLAB, Scikit-Learn, Streamlit, Gradio, Flask, Postman, Label Studio, Youtube-dl, DVC, WebDataset, Poetry, FFmpeg, Soundfile, Pynini, OpenFst, Conda, Shell Scripting, Bash, CI/CD, NFS, Slurm, Pytest, Selenium
- **Soft Skills** : Team collaboration, Interpersonal communication, Research, Mentoring

WORK EXPERIENCE

Zoho Corporation, Chennai – *AI Engineer, LLM ZLabs R&D – HuggingFace APIs, Data Engineering, LLM* Jan 2024-Present

- Researched data tools for LLMs and built a Streamlit app using HuggingFace APIs to load, tokenize, filter data, ingest metadata, generate recipes, and search based on keywords using regex.
- Generated hundreds of billions of tokens of Indic data by translating open-source English datasets using an internal CPU-based translation model, optimized with multi-threading for faster processing.
- Researched data compositions for open-source LLMs and curated high-quality fine-tuning datasets.

Zoho Corporation, Chennai – *AI Engineer, ASR ZLabs R&D – ITN, Pynini, PyTorch, RESTful APIs, DVC, Flask* July 2021-Dec 2023

- Integrated an efficient rule-based ITN system into the ASR post-processing pipeline using NVIDIA's NeMo Text Processing. Customized grammars for specific use cases, added 4 new grammar rules, drastically improving ASR output readability. Compiled grammar rules into a FAR file, reducing processing time **140x** and memory usage to **20%**.
- Led a **4**-member annotation team for manual ITN data collection. Evaluated F1 scores of internal punctuation and capitalization models and contributed to developing a transformer encoder-based neural ITN system to improve scores.
- Conducted experiments to fine-tune an internal ASR model. Developed a Flask-based ASR inference demo application, later deployed as a Linux service for continuous operation, enabling seamless internal testing.
- Preprocessed datasets for ASR model, increasing overall training data by **16%**. Developed tools for efficient internal API communications and robust dataset and model management, widely adopted by various teams - A wrapper for Stratus (internal storage system) and integrated it with dvc-stratus (DVC wrapper), implemented OAuth credentials and resource policies to track user operations, improving cross-team usages; Maintained ZWAF for OneAuth token validation in cross-team Zoho API communication. Enhanced ASR system functionality by implementing an audio I/O module and deploying a FastAPI-based web server secured with ZWAF middleware.

Zoho Corporation, Chennai – *Intern, ASR ZLabs R&D – Python, PyTorch Dataset, Pytest, Streamlit* Jan -June 2021

- Collected and preprocessed datasets for ASR model and assisting peer ML Engineers with their data requirements - increased the existing benchmark data suite by **83%** (~400 hours of audio).
- Processed open-source datasets using youtube-dl for YouTube data, Google ASR for synthetic transcriptions, and developed a Streamlit tool for audio recording. Organized team sessions to create a limited benchmark with real-time recordings. Wrote PyTorch Iterable Dataset classes for each dataset and unit tests for them using pytest.

ONGC, Chennai - *Intern – CSS,HTML, XAMPP, MySQL* | GitHub May, 2019

- Built a rich web-based Intranet Issue Tracker on ONGC Intranet for Regional Computer Center (RCC) users, allowing users to create/retrieve issues, deny/accept solutions, view resolution status. Gained experience with a team of software engineers to build a real-world product.

PROJECTS

Gesture-based game control using a low-resolution camera – *Deep Learning, TensorFlow, Keras, ConvLSTM* July-Dec 2020

- Developed a gesture-based control system using a 3D ConvLSTM model with efficient pre-processing techniques to replace keyboard inputs in games, achieving ~80% accuracy with minimal latency. Evaluated the feasibility of utilizing the Gulpio package to cache image frames during training, addressing GPU starvation issues.

Web app for College Admission Management System – *Python, Flask, Firebase, Pyrebase, Bulma* | GitHub Mar-May 2020

- Developed application for admin and user, where admin can add colleges, designate cut-offs, and register students into the college. Users can log in, submit an application for admission and receive notifications regarding the status of their application. The app was deployed using Firebase Hosting.

Network configuration and troubleshooting – *Packet Tracer, CCNA Lab Pods* | GitHub Jun, 2018-Jun, 2019

- Configured and troubleshot complex network topologies on Packet Tracer simulator and real networking equipment as part of CCNA lab training. Gained a thorough understanding of physical set up, configuration, operation and maintenance of multiple Cisco routing and switching devices.