

AAYUSH ACHARYA

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Education

Tribhuvan University, IOE Pulchowk Campus

Nov. 2017 – March 2022

Bachelor in Computer Engineering

Grade: 3.92(Scholaro) - 77.55%, First Division

United Academy

2015 – 2017

High School

Grade: 84.8%, First Division with distinction

Test scores

TOEFL Total: 108, Reading: 28, Listening: 29, Speaking: 28, Writing: 23

GRE: Total: 318, Quant: 164, Verbal: 154, AWA: 4.0

Research

Nepal Applied Mathematics and Informatics Institute for research (NAAMII)

2021 – 2022

Research intern

- Implemented a seamless integration of Automatic Speech Recognition (ASR) and Natural Language Processing (NLP) by employing the self-supervised wav2vec2 model for audio transcription. The integration enhances the overall system's accuracy and efficiency in processing Nepali audio data.
- Created a total of 16 experiments using the combination of wav2vec2 base model trained on LibreSpeech english dataset(B), B + Indic Language(I), B + Curated nepali dataset(N), and B + I + N which were tried on top of 4 different language models.
- Integrated a BERT-based Multilingual Representations from Indian Languages (MuRIL) model specifically designed for Indic languages like Nepali. This incorporation significantly enhances the system's ability to understand and process the nuances of the Nepali language, ensuring more accurate categorization of the audio content.

Teaching/Mentoring experience

IOE Pulchowk Campus, Tribhuvan University in collaboration with Rara Labs

2022 – 2023

Undergraduate thesis mentor

- Established a consistent mentorship routine with weekly progress meetings, ensuring ongoing support and guidance for the two undergraduate thesis students. This approach facilitated a structured environment for discussing project advancements and challenges.
- Engaged in a reciprocal exchange of insights and advice with the students, creating a collaborative mentorship dynamic. Partnered with the university department to organize presentation workshops, emphasizing a collaborative effort in enhancing students' skills.

Presentations

7th International Workshop on Effective Engineering Education (IWEEE) — Junior year

2022

- Presented an image classification model designed to assist farmers by enabling them to capture pictures of pests, identify them, and suggest their natural control methods.

Professional experience

Rara Labs

2022 – 2024

Software Engineer

- Led diverse projects in healthcare and fintech sectors, specializing in software engineering using Golang and machine learning with Python.
- Established robust CI/CD pipelines and integration testing frameworks, ensuring seamless software delivery and quality assurance.
- Started and led biweekly knowledge-sharing sessions in the company, fostering team collaboration and exchange of new findings and collaboratively solving challenges.
- Provided mentorship to undergraduate students and successfully transitioned from an engineer to a Project Lead, recognized for leadership and technical proficiency.

Open source contributions

georgia-tech-db/evadb

2.5k GitHub stars

Database system for AI-powered apps

- Integrated arXiv repository data as part of third party databases in EvaDB. This allows performing SQL queries on the metadata and content of papers present in arXiv.
- Integrated Google's Gemini generative model for chat completion. The example usage of this functionality may be to generate labels from a video summarizing model's output in EvaDB.
- Added support for arithmetic expressions in projection with precedence in a lark based query parser. This allowed execution of queries like *SELECT 1+2*;
- Performed cleanup tasks of AI models on drop functions and miscellaneous refactoring tasks.

go-gorm/gorm

34.4k GitHub stars

Popular ORM in Golang.

- Fixed an issue which allowed new database session to be created with trigger hooks disabled.

Projects

HMS with Early Warning Sepsis Prediction System | *Python, Go*

- Utilized patient data, including demographics and EMR records, to build predictive models for early sepsis detection.
- Developed a healthcare management product featuring patient allocation across hospitals, wards, and beds.
- Integrated sepsis prediction algorithms to enhance patient safety, enabling timely intervention and treatment.
- Led the creation of robust task assignment functionalities, including checklists and vital measurements, ensuring efficient healthcare workflows.

Cross border Request to Pay(RTP) System | *Go*

- Utilized the ISO20022 financial standard for messaging with secure mechanisms and digitally signed payloads to protect the integrity of transactions.
- Created CI/CD pipelines, with automated integration testing and deployment, reducing failures in production system.
- Led the design and implementation of independent execution threads in Go, optimizing performance and scalability.

ASR and Classification of Nepali Speech | *Python, Fairseq, React, Fast API*

- Designed an app listing Nepali videos with their transcripts assorted into general categories to avoid clickbait.
- Experimented training a self-supervised wav2vec model for automatic speech recognition and dockerized and deployed the best performing model.
- Trained a BERT based model trained on Indic languages for Nepali text classification.

Affiliations

Rara Labs: Software Engineer — *2022-Present*

Nepal Applied Mathematics and Informatics Institute for research (NAAMII): Research intern — *2021-2022*

Logpoint Inc.: Solutions intern — *2022-2022*

Microsoft Student Learn Ambassador(MLSA): Beta Member — *2020-2022*

Engineering Youth Network Amnesty International Nepal: Member — *2019-2022*

Zerone Magazine: Editor — *2021-2022*

Technical skills

Python — *Proficient*

Databases and SQL — *Skilled*

Cloud services and deployment — *Knowledgeable*

Golang — *Proficient*

PyTorch/Tensorflow — *Skilled*

React and Typescript — *Knowledgeable*

Honors and outreach

- Ranked under top 1% in undergraduate entrance examination among 15000 students.
- Regular receiver of TU stipend, a merit based semester wise allowance for academically well-performing students.
- Ranked 3rd out of 600 students in high school in National level examinations.
- Organized LOCUS Hack-a-week, a 7-day hackathon event with nationwide reach and > 50 applying teams.
- Organized Advanced C workshop along with a workshop on Particle Swarm Optimization as part of MLSA.
- Blog with over 1.34K page views per month according to Cloudflare analytics(as of Nov 2023).