Aman K Shihab

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Experience

Software Development Intern January 2023 – April 2023
Supermeet *Remote*

- Built end-to-end speaker diarization and transcription pipeline using SOTA machine learning techniques
- Created scalable FastAPI endpoint to expose the pipeline as a RESTful API
- Deployed the endpoint on GCP using Kubernetes and optimized resource utilization for cost-effective operation

Undergraduate Researcher December 2021 – December 2022
Cognitive Computing Research Center *Angamaly*

- Worked on improving the performance of a pose detection deep learning model built in PyTorch
- Developed a state of the art deep learning model for named entity recognition in Malayalam

Education

Bachelor of Technology in Computer Science and Engineering (CGPA: 8.73) August 2019 - July 2023
Federal Institute Of Science And Technology *Angamaly, Kerala*

Class 12, PCM (Percentage: 86.4%) April 2018 - June 2019
Crescent Public School *Aluva*

Class 10 (CGPA: 10/10) April 2016 - May 2017
Crescent Public School *Aluva*

Paper Publications

Lithium-Ion Battery Modelling: A Machine Learning Approach | *Paper Accepted in ICSET 2022*

- **Won the best paper award**
- Outlined ways on how to exploit the features like voltage, current, temperature, charge/discharge rates of the battery to predict the state of charge and state of health of a battery
- Suggested time series and anomaly detection models to forecast the state of the battery and detect anomalies earlier in the life-cycle of a battery. Highlighted impact of these approaches in electric vehicle battery conservation

Projects / Open Source Contributions

Named Entity Recognition In Malayalam | *github.com/amankshihab/TENER-MALAYALAM*

- Trained and compared the performance of RNN and LSTMs on NER for Malayalam
- Trained RNN and LSTM from scratch encountering and solving various numerical instabilities.
- Trained Transformer Encoder and obtained a F1-Score of 0.98 which is the current state-of-the-art.
- Built an OCR pipeline to read documents and pass it through the model.
- A demo is hosted here. : https://amankshihab-tener-malayalam-app-st-app-jxbima.streamlit.app/

Melanoma Classification | *Computer Vision, Deep Learning*

- Experimented and trained ResNets and Vision Transformer on melanoma dataset from Kaggle
- Experimented with different variations of ResNets and Vision Transformers using PyTorch
- Logged the results to Weights & Biases to gain insights of the training process.

Tensorflow Code Generator Playground | *Typescript*

- Modified a fork of Tensorflow playground to generate the tensorflow code for the visualized model.
- Responsible for
- Visualized the result based on likelihood of acceptance
- Deployed the application on Heroku

Drone Image Segmentation *Computer Vision*

- Implemented UNET from scratch from the paper, made some dataset specific changes
- Used the UNET model to segment different objects in landscaped from drone images.
- Evaluated this model using metrics like IoU and Dice similarity coefficient.

AutoMute *IoT, Computer Vision*

- Trained a VGG-16 model to detect the hand gestures of a mute person
- Used the output to control lights, fans and buzzer to help mute people interact with smart devices
- Used ESP-8266 for communication and relays to control the devices
- This project is an attempt at implementing an inclusive smart home experience

Python Telegram Bot *Python, REST APIs*

- Built and deployed a chatbot to help students keep up to date on matters in the class
- Integrated various external services using REST API's
- Successfully deployed this bot to heroku.
- Actively used by all the students in the class.

Technical Skills

Languages: Python, C, C++, SQL, JavaScript, HTML/CSS
Frameworks: PyTorch, Flask, Django, React, FastAPI, pandas, NumPy, Matplotlib, scikit-learn

Achievements

First Prize, Galleria Problem Solving Competition

- Designed solutions to various problems faces in the society and industry
- Developed flowcharts and wrote descriptions of the solution
- Communicated the developed solutions and discussed about the feasibility of the solutions and the expcted results.
- Won the best paper award

Volunteer Experience

ICEFOSS 2023 | *Tech Lead* February 2023 - April 2023

- Led a team of 4 people and contributed in development of the website and registration software.
- Led the planning and execution of an AI art generation competition, resulting in 60 entries.
- Collaborated with a team of organizers to plan and execute a successful hackathon event.

ICEFOSS 2022 | *Website Developer* April 2022 - June 2022

- Designed and developed websites for the main event and the hackathon held as a part of it
- Developed a responsive UI using React and Tailwind
- Led a team of 5 in charge of developing both the websites

5-Week Web Development Bootcamp | *Mentor* April 2022 - July 2022

- Mentored 60 first-year students from Computer Science and Design
- Taught the workings of internet, websites and backend systems
- Explained the ecosystem of developer tools for web development, like React, nodejs.