KOUSHA AMOUZESH

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EDUCATION

Bachelor of Science in Computer Science (September 2021 – December 2025)
Simon Fraser University - GPA: 3.90

SKILLS

- **Programming Language**: Python, JavaScript, Java, R, C++, C, SQL, TypeScript, HTML, CSS
- **Frameworks**: Node.js, React.js, Next.js, PyTorch, TensorFlow, LangChain, MongoDB, Firebase, Flask
- **Tools:** Git, AWS SageMaker, AWS DynamoDB, Anaconda, Docker, Hugging Face, Jira

EXPERIENCE

Software Engineer (Machine Learning) Co-op (October 2023 – present)
Forgeahead Solutions *Surrey, B.C. - Hybrid*

GEN AI based Story Board and Clip Creation Platform

- Proposed a low-level architecture for generative models, essential for producing a storyboard and animated clips based on ideas prompted by the user on a web platform
- Aided the project lead in discussing the project requirements with the clients on several meetings
- Collaborated in implementing a Python script for training an image diffusion pipeline with PyTorch library
- Integrated the GPT API with a diffusion pipeline to produce JSON prompt for generating a sequence of images
- Designed a Python script for deploying the model to AWS Sagemaker for utilizing a GPU powered API instance

Early Breast Cancer Prediction Platform

- Used GCP's Virtual Machine for training and running lip-sync models that generate speaking AI avatars, used by an American medical company, who describe patience breast screening report for cancer
- Developed a Neural Network with transfer learning for facial key point detection on lips using Pytorch
- Implemented a face-swap pipeline with Python for videos using a key point detection model to swap key facial images between video frames and the reference image

PROJECTS

NewLink: SFU's Newcomer Platform (JavaScript, Llama 3, React.js, Node.js, MongoDB) (May 2024 – June 2024)

- Supervised a team of 4 in Stormhacks hackathon to build a web application for newcomer to Simon Fraser University enabling users to find social events and know about their school through an AI chatbot
- Imported the latest Llama 3 model into a LangChain Conversation Chain instance and trained the model on tokenized SFU-related data to enable Llama to answer specific questions about SFU's culture and history
- Developed an a Node.js API for the conversation pipeline to enable real time chats from User on the frontend
- Implemented the signing up API to store User's credentials on a MongoDB database for later authentication
- Designed the React.js home page and the AI chatroom with animated visuals using Tailwind and CSS

Fine-Tuned Llama AI assistant (Python, PyTorch, LangChain, Flask) (January 2024 – May 2024)

- Processed and cleaned a dataset of human conversation prior to training with low rank adaptation method
- Used Llama's fine-tunning script from Hugging Face to prepare the model weights for LoRa training
- Designed a vector database with LangChain framework to enable past referencing in the conversation
- Developed a Flask API, enabling users to interact with the model using the LangChain database

SFU Connect Website (Node.js, React.js, JavaScript, Python, Tailwind) (October 2023 – January 2024)

- Led a team of 5 developers in creating a website with React.js, Node.js, and Python to establish an online platform for SFU students to explore clubs and events on campus
- Utilized zero-shot classification model for semantic analysis on clubs' data and classification based on categories that allow a more advanced search across the database
- Administrated a MongoDB database and designed APIs with Node.js for the use of the React.js frontend
- Managed the GitHub repository and published reviews on merge requests submitted by the team

Facial Landmark Detection for Face Swap (Python, PyTorch) (November 2023 - December 2023)

- Preprocessed raw images of individuals and extracted facial landmark coordinates in preparation for training
- Implemented transformation functions including, rotation, normalization and resizing to reduce overfitting
- Trained a ResNet model in PyTorch through transfer learning for detecting facial features on face
- Validated the model through visualizing the loss and accuracy graph with Matplotlib
- Used a triangulation technique for predicted key points to seamlessly swap faces using Dlib Library