KOUSHA AMOUZESH

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EDUCATION

Bachelor of Science in Computer Science (September 2021 – December 2025)
Simon Fraser University

SKILLS

- **Programming Language**: Python, JavaScript, R, Java, C++, C, SQL, TypeScript, HTML, CSS
- **Frameworks**: PyTorch, TensorFlow, Node.js, React.js, Ngrok, LangChain, Matplotlib, MongoDB, Firebase
- **Tools:** Git, AWS SageMaker, AWS DynamoDB, Anaconda, Jupyter, Docker, Hugging Face, Postman API, 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 story board 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
- Utilized a GPT language model API to produce stories in response to user's ideas and generate meaningful JSON formatted prompts that enables image-diffusion for the creation of a visual story board
- Conducted research on the fine tunning LLMs and image diffusion models using Low Rank Adaptation (LoRA)
- Trained a diffusion model using LoRa method and developed an inference script for deployment on AWS
- Deployed the diffusion model on AWS SageMaker server for multi-thread processing and faster response

Early Breast Cancer Prediction Platform

- Used GCP's Virtual Machine for training and running lip-sync models that generate speaking AI avatars who describe patience breast screening report for cancer, used by an American medical company
- Developed a Neural Network with transfer learning for facial key point detection on lips using Pytorch
- Implemented a PyTorch-based face-swap algorithm for videos, to add facial animation on AI avatar's face using real-human reference videos

PROJECTS

Fine-Tuned Llama AI assistant (Python, PyTorch, Ngrok, LangChain, React.Js) (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
- Wrapped the model with a Hugging Face pipeline to deploy the model using a public Ngrok endpoint
- Designed a vector database with Langchain framework to enable past referencing in the conversation
- Developed a React.js user interface for user to communicate with model using the Ngrok endpoint

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

Party-Nav Website (JavaScript, React.js, Node.js, Firebase, GCP, HTML, CSS, Git) (June 2023-July 2023)

- Developed a client-server environment using React, CSS, Node.js, GCP and NoSQL Firebase database enabling users to discover parties in the Vancouver area and announce their own events
- Built an online chatroom managed by firebase database for users to chat in real-time about events
- Integrated Google Map's API to provide visual navigation display for each event saved on the database