

# Navdeep Singh

Canadian Citizen | navdeep5@ualberta.ca | (587)-926-7200 | [linkedin.com/in/navdeep5](https://www.linkedin.com/in/navdeep5) | [github.com/navdeep5](https://github.com/navdeep5)

## EDUCATION

### University of Alberta

Edmonton, Alberta

B.S. in Computer Science and Bioinformatics; CGPA (4.0/4.0)

Expected Graduation, Dec 2024

- **Honours/Awards:** Dean's Honour List, The Canadian Information Processing Society Scholarship, The Microquest Leadership Award in Computing Science, A Louise McKinney Post-Secondary Scholarship, etc.
- **Related Coursework:** Data Structures & Algorithms, Software Engineering, Machine Learning, Artificial Intelligence, Object-Oriented Programming, Computer Vision, Reinforcement Learning, Game Development, Statistics & Applications, Deep Learning

## TECHNICAL SKILLS

**Languages:** Python, Java, JavaScript, HTML/CSS, SQL, C#, C++, C, R

**Frameworks/Libraries:** PyTorch, TensorFlow, Hugging Face, React.js, Node.js, SQLite, Mongoose, JUnit, .NET

**Tools:** Git, MongoDB, Firebase, Android Studio, Figma, Linux/Unix, Unity, Unreal Engine, REST API, JSON, Jira, CUDA, Vim

## WORK EXPERIENCE

### My Viva Inc.

Edmonton, Alberta

Software Developer Intern

May 2024 – Present

- Streamlined deployment of a mobile application with **CI/CD** using **.NET, REST, Unreal Engine, and C#**, enabling users to chat with an AI bot for daily wellness advice
- Standardized AI components to utilize **LangChain** and **Agents**, resulting in reduced latency through minimized external function calls

### Huawei Technologies Canada Co. Ltd

Edmonton, Alberta

Artificial Intelligence Engineer Intern

May 2023 – Dec 2023

- Optimized Stable Diffusion v1.5 and v2.1 (**Generative AI**) using techniques such as layer pruning, knowledge distillation, and step-distillation to achieve **89%** latency improvements
- Developed **Python** scripts to prepare fine-tuning datasets with over **13 million** images, and engineered **fine-tuning code** resulting in **FID** and **CLIP scores** of **32** and **30** respectively, thereby enhancing image quality
- Fabricated a novel diffusion-based image-editing model for cellular deployment using **scikit-learn** and **PyTorch** to visualize and inject **attention maps**

### University of Alberta – Dr. Guohui's Lab

Edmonton, Alberta

Research Assistant

May 2022 – Aug 2022

- Developed a Convolutional Neural Network in **Python** to predict antigenicity based on amino acid sequence of Influenza A virus, which is being utilized to create a system for determining the best vaccine for upcoming flu seasons
- Scraped NCBI for **285** sequences and trained model to achieve an Accuracy and F1-score of **94** and **97** respectively
- Organized visual analytic data using **Excel** and **R**, intended for use in research paper drafts

### Rehabilitation Robotics Laboratory

Edmonton, Alberta

Software Developer Intern

May 2022 – Aug 2022

- Developed GlenxRose application using **Unity, Photon Engine 2, and C#** to improve patient adherence to therapies for patients with acquired brain injury using **Augmented Reality**

## PROJECT EXPERIENCE

### Chemical Text-Mining System – [GitHub](#)

- Built a **ChatBot**, utilizing **Langchain** and **Chainlit**, which uses **retrieval-augmented generation** from a **Neo4J** database to answer questions concerning to chemical or metabolic biomarkers
- Performed fine-tuning on a prompt-engineered **HuggingFace LLM**, Mixtral-8x7B-Instruct, incorporating entity-tagging and data-generation (**SQL**), to create a relation extraction **LLM** with F1-score of **87**, surpassing GPT-3.5-Turbo

### Overgrown – [Website](#) and [GitHub](#)

- Fabricated a mystery, thriller game using **Java** and **RPG Game Maker**, resulting in winning the Excellence in Audio Design Award
- Designed, prototyped, and implemented mini-games and custom plugins to enhance gameplay experience

### QR-Game – [GitHub](#)

- Built an **Android Studio** QR code scanning application following **Object-Oriented Programming** alongside **Agile** approach — generating **UML** diagrams, **CRC** cards, prototyping with **Figma**, and developing **7 Junit tests**
- Implemented scanner functionality, user and owner actions, and interactions with **Firestore** database, alongside developing scoring and ranking algorithms