# Siddharth Arya

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## EDUCATION

**University of Toronto** — Toronto, ON

*B.S. in Computer Science (Minor in Statistics and Math) GPA: 3.89* — *Expected May 2025*

- Recipient of University of Toronto International Scholar Award - Scholarship
- Coursework: Data Structures, Discrete Maths, Algorithms, Digital Circuit Design, Machine Structure and Assembly-language Programming, Linear Algebra, Software Design (Clean Architecture, Design Patterns), Probability, Statistics, Intro to Data Science, Intro to Machine Learning, Operating Systems, Computer Vision, Natural Language Processing (NLP), Deep Learning

## TECHNICAL SKILLS

**Languages**: Python, C, SQL (Postgres),Java, JavaScript, Typescript, HTML/CSS, R
**Frameworks**: React, Node.js, ExpressJS, JUnit
**Developer Tools**: Git, Docker, Microsoft Azure, AWS, Linux(Shell scripting), VS Code, Slurm Workload Manager
**Libraries**: PyTorch, Pandas, NumPy, Matplotlib, Scikit-Learn, Pytest, Hugging Face (transformers)

## EXPERIENCE

**Machine Learning Engineer Intern** — January 2024 - August 2024

*Vector Institute for Artificial Intelligence* — *Toronto, ON*

- Engineered a novel Machine Learning based method to **monitor and evaluate performance of deployed Deep-Neural-Networks**, achieving a **93% True Positive Rate** in foreseeing model failure, ensuring **proactive model reliability** and **performance**.
- Organized and cleaned data for over ∼ **200,000 patients** into **900 features** (lab results, vitals, demographics) using **SQL** and **Numpy**, and trained neural networks to achieve ∼**95%** accuracy in predicting 14-day mortality
- Led a comprehensive benchmark study evaluating the performance of various shift detection methods, implementing solutions in **PyTorch** and **Scikit-learn** for both real-world medical and semi-synthetic data shifts, funded by the **Data Science Institute at the University of Toronto**
- Presented research findings at **Showcase Day** among a select group of grant recipients, highlighting the efficacy of shift detection methods and the importance of this research towards **Reliable AI**

**Software Engineering Intern** — September 2023 - December 2023

*OOt Social Inc* — *Toronto, ON*

- Developed **back-end infrastructure** for new feature on 'Oot' mobile app using **Node + Express Js (with Typescript)** and **MYSQL database**, using around **Clean Architecture** and ensuring well documented code
- Deployed server prototype supporting **7 RESTful API Endpoints** with **authentication middleware** for safety
- Established **CI/CD** pipeline through **Github actions** for **automated unit and integration tests** with Jest and seemless deployment to **Azure** on release
- Collaborated effectively using **Agile workflow** and **Jira tickets** in order to plan and meet client requirments

## PROJECTS

**Exploration of Novel ML Model** | *Python, Pandas, Numpy, Scikit-learn* — September 2023- December 2023

- Evaluated several techniques - **KNN**, **Principle Component Analysis** and **Decision Trees** - on their efficacy for classification on the MNIST Dataset using **Scikit-Learn**
- Explored a Novel Modification on the KNN, which **reduced input features by 87%** while ultimately achieving **93.09% accuracy** on classifying inputs on the MNIST dataset

**ShopForHome - Prototype Web App** | *NodeJs, ExpressJs, ReactJs, MongoDB* — June 2023 – September 2023

- Developed **Rest-API** Backend using **Express-Js** - allowing for the CRUD operations on users/products, adding to and purchasing from the cart, and many other use cases, with **JWT** used for security - and persistence of all that data through MongoDB.
- Built Multi-Page Website Using **React** to allow clients to access their accounts and interact with products.