Ali Chaudhry

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KEY COMPETENCIES

C++, C#, Python, Git, DevOps, PyTorch, Scikit Learn, Pandas, Numpy, Matplotlib, Django, LLMs, Cursor

Docker, Kubernetes, Statistical Analysis, Streamlit, CI/CD Pipelines, Scrum, Agile Development, React.js

TensorFlow, Keras, Plotly, OpenMP, OpenCV, HTML/CSS/Javascript, MongoDB, Google Colab

WORK EXPERIENCE

Rocscience **Toronto, ON**
Software Developer *09/2022 - Present*

- **Lead** developer for RSPile and Settle3, utilizing **MFC** to design and implement **user-friendly** front-end interfaces
- Reduced technical debt by refactoring legacy **C++** code to conform to **MVVM** architecture, enabling more scalable, maintainable, and bug-free code for future developers
- Produced high-quality, on-time projects by thoroughly planning software sprints, executing development, and deploying end-to-end release pipelines on **Azure DevOps**
- Collaborated in **Scrum** teams to deliver high-priority features through iterative **Agile** development, ensuring rapid delivery and continuous improvement
- Applied multi-threaded processing with **OpenMP** to accelerate computational tasks, reducing analysis runtime by up to **40%** for large-scale simulations

LoadPro.io **Canada**
Founder *06/2021 - Present*

- Developed a web-based structural analysis application on **Streamlit Cloud** dedicated to helping students and engineers automate beam, frame, and truss calculations
- Engineered a scalable backend with **Python** and **MongoDB**, allowing users to securely store, retrieve, and manage structural analysis projects
- **Integrated Google OAuth 2.0 authentication**, allowing seamless user sign-ups, logins, and secure session management
- **Visualized** structural analysis results using **Plotly, Matplotlib, and Altair**, providing interactive graphs for shear, moment and axial force diagrams

Associated Engineering **Edmonton, AB**
Software Developer *01/2022 - 04/2022*

- Optimized engineers' time on project-specific structural calculations by creating generalized programs with **Tekla Tedd's API**, saving the company **weeks** on deliverables
- Reduced dependency on costly third-party engineering software by providing a validated in-house solution, allowing the company to **streamline** calculations and **lower expenses**

UWaterloo – Centre for Pavement and Transportation Technology **Waterloo, ON**
Software Developer *04/2021 - 12/2021*

- Enhanced the lab's research portfolio through a high-impact, **National Research Council**-funded publication that studied predictive pavement modeling for infrastructure planning
- Assisted in the development and implementation of **machine learning algorithms** trained from **25+ years** of pavement data with methods including **linear regression**, **random forests**, **support vector machine**, and **Artificial Neural Networks (ANNs)** to predict long-term pavement performance
- Performed **hyperparameter tuning** and **feature engineering** within the **Scikit-learn** library to achieve a model accuracy of **R^2 = 0.95**

RELEVANT PROJECTS

Virtual Chatbot Assistant for Medical Clinic

- Created a **Retrieval-Augmented Generation (RAG)** chatbot trained on a podiatry clinic's website data to **enhance** customer service and **improve** patient care

Facial Expression Recognition Model

- Trained a **TensorFlow CNN** on the FER-2013 dataset using **Google Colab** and **cloud GPUs**, applying preprocessing techniques like resizing and feature extraction to enhance model accuracy

EDUCATION

University of Waterloo **Waterloo, ON**
Bachelors of Applied Science, Computing Minor *GPA: 3.7/4.0*