# Fuad Thabet

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## EDUCATION

### University of Ottawa
2021 - 2026

*Bachelor of Science in Computer Science, Minor in Data Science*

## EXPERIENCE

### Software Developer
Mar 2025 - Present

*Mo.Fu* — *Ottawa, ON*

- Built and maintained a full stack web application for a financial tech company serving stock predictions through the use of statistical modeling and utilizing **machine learning**.
- Designed and deployed an **Flask-Angular** pipeline with a **RESTful API** to serve model-generated CSV outputs to our site, enabling real-time external user access and eliminating **100%** of manual data transfers.
- Engineered a **Redis-based** caching layer with **Docker** to store and retrieve parsed **JSON** payloads from uploaded CSVs, reducing load times from **10s to under 500ms** and significantly improving backend response times.
- Optimized a simulated stock portfolio engine by implementing efficient data structures, improving simulation speed by **40%** and increasing accuracy of performance tracking across multiple time horizons.

### Full-Stack Web Developer
Oct 2023 - Apr 2024

*Mooruk Design Solutions* — *Ottawa, ON*

- Built a modular **React - Node.js** CRM to track client interactions, organize lead pipelines, and automate follow-up scheduling, reducing weekly manual data entry from hours to minutes and increasing lead conversion rates.
- Designed end-to-end **CI/CD** pipelines using **GitHub Actions** to automate testing and deployment workflows, significantly improving development velocity and ensuring early-stage codebase stability.
- Developed asynchronous **REST APIs** to handle real-time data and invoice transmission between the front end and a **MongoDB** backend, enhancing app responsiveness and optimizing performance under load.

## PROJECTS

### Linear Regression Model Library ⭘ | *Python, NumPy, Pandas, Streamlit, Hugging Face*

- Designed a **Python** library from scratch to implement Linear, Ridge, and Lasso Regression models for educational use, addressing **scikit-learn's** lack of transparency in model internals.
- Built custom optimizers using vectorized gradient and coordinate descent, reducing runtime up to **3x** compared to loop-based methods while ensuring convergence stability.
- Achieved a **380%** improvement in $R^2$ over baseline **scikit-learn** models on benchmark datasets.
- Deployed an interactive **Streamlit** app on **Hugging Face Spaces** for live model testing and comparison of regularization effects.

### Housing Price Regression Model ⭘ | *Python, NumPy, Pandas, Seaborn*

- Explored the effectiveness of regression algorithms on real estate pricing data, finding that simpler models outperformed ElasticNet by up to **20%** in predictive accuracy.
- Built a modular preprocessing pipeline with categorical encoding, LOF-based outlier detection, and K-Fold cross-validation to ensure reproducibility and model robustness.
- Conducted statistical diagnostics on model residuals to guide regularization and reduce variance.

### Exploratory Data Analysis Portfolio ⭘ | *Python, Jupyter, Pandas, Seaborn, NumPy*

- Created a portfolio of **Jupyter** notebooks performing EDA on real-world datasets, focusing on improving preprocessing efficiency and model readiness.
- Replaced iterative loops with vectorized transformations to speed up processing by up to **50%**.
- Applied Z-score and IQR filtering to remove outliers, lowering model MSE by **18%** and improving accuracy by **12%** through correlation-based imputation of missing values.

## SKILLS & CERTIFICATIONS

**Certifications**: Supervised Machine Learning: Deep Learning, Regression and Classification
**Languages**: Python, JavaScript, Typescript, SQL, Java, C++, Go, HTML/CSS
**Frameworks**: Next.js, Angular, React, Node.js, Flask, Django, Express.js, Swift, NPM, Spring
**Technologies**: PostgreSQL, SQLite, Git, PyTorch, Redis, Docker, TensorFlow, Pandas, Scikit-learn, Seaborn, Firebase, Auth0
**Other**: Mathematics, Statistics, OOP, Data Structures, Algorithms, Databases