

# MARIAM MERZA

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## SKILLS

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- Well versed in artificial intelligence/machine learning techniques including **natural language processing, data analysis**, classification, pandas, Scikit-learn, NumPy, **TensorFlow**, Keras.
  - Experienced in **Python, Java, JavaScript, SQL, Bash**, and Microsoft Suite applications including **Excel, Word, PowerBI**, and **MS Project**.
  - **Languages:** English (fluent), Arabic (limited proficiency), French (limited proficiency).
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## EDUCATION

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*Computer Science Bachelors of Science (Hons)* April 2026

Trent University – Oshawa, ON

- **Relevant Coursework:** Applied AI & Machine Learning, Artificial Intelligence, Philosophy of AI, AI in Information Systems, Data Mining.

## PUBLICATIONS

- M. Merza, U. Obinwanne and W. Feng, "Reducing Financial Debt and Illiteracy in Canadian Populations Using Machine Learning Prediction Models," *2025 IEEE/ACIS 29th International Conference on Software Engineering, Artificial Intelligence, Networking and Parallel/Distributed Computing (SNPD)*, Busan, Korea, Republic of, 2025, pp. 998-1000, doi: 10.1109/SNPD65828.2025.11253447.
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## WORK EXPERIENCE

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### Research Assistant – Data Analysis

*Trent University*

September 2025 – January 2026 / Oshawa, ON

- Conducting data analysis on social media data (YouTube, Meta, Reddit, etc.) and securing access to platform APIs.
- Performing pre-processing and sentiment analysis of the data.
- Assisting with categorization development, data classification and logistic regressions.
- Implementing classification algorithms on datasets.

### Undergraduate Researcher

*Trent University*

May 2025 – July 2025 / Oshawa, ON

- Developed and compared ARIMA, LSTM and hybrid forecasting models on Canadian financial datasets.
  - Performed data preprocessing, feature engineering and model evaluation (precision, recall, F1, and MSE metrics).
  - Co-authored a research paper detailing methodology, results, and recommendations for improving financial decision-making.
  - Presented the finished research paper at the SNPD2025-Summer IV International Conference on Software Engineering, Artificial Intelligence, Networking and Parallel/Distributed Computing.
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## PROJECTS

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**AMN Group Website** | *HTML, CSS, JavaScript, Formspree*

April 2025 – Present

Demo: <https://amn-group-demo.vercel.app/>

Source: <https://github.com/mariam-merza/amn-group-demo>

- Built and deployed a responsive business website using HTML, CSS, JavaScript, and Formspree.
- Integrated Formspree to handle form submissions without a custom backend.
- Optimized layout and styling for cross-device compatibility and accessibility.
- Organized reusable components and clean file structure for maintainability.
- Improved digital presence and client inquiry flow.

**Personal Task Manager** | *MERN stack (React, Node.js, Express, MongoDB, JWT).*

May 2026

Link: <https://marys-personal-task-manager.vercel.app/login>

Source: <https://github.com/mariam-merza/task-manager>

- Built a full-stack task management application enabling users to create, update, delete, and track tasks with persistent database storage using MongoDB.
- Implemented secure user authentication and authorization using JWT-based login system with protected routes.
- Designed a responsive and intuitive React frontend with real-time task state updates for improved user experience.
- Developed RESTful APIs with Express and Node.js to handle CRUD operations and user-specific task data efficiently.

**Financial Algorithm** | *Python, pandas, scikit-learn, TensorFlow/Keras, time-series analysis, academic writing.*

May 2025 – July 2025

- Developed an end-to-end financial ML pipeline to detect anomalies, forecast expenses, and generate personalized financial advice using synthetic user data.
- Built and compared ARIMA, LSTM and hybrid models, with the LSTM achieving an MSE of 168K (94% lower than ARIMA) for time-series forecasting.
- Implemented Isolation Forest anomaly detection, obtaining 0.18 precision/recall/F1 for irregular spending identification.
- Visualized forecast outputs and financial trends using Matplotlib.