

# Oumer Gharad

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## EDUCATION

### University of Ottawa

Ottawa, ON

*Bachelor of Science in Computer Science; GPA: 3.7/4.0*

*Expected Graduation: December 2028*

- **Relevant Coursework:** Data Structures & Algorithms, Computer Architecture, Software Engineering, Calculus II

## TECHNICAL SKILLS

**Languages:** Python, JavaScript, TypeScript, Java, C++, HTML/CSS

**Developer/Design Tools:** VS Code, Git, GitHub, AWS, Figma, Render, Docker, Playwright, Puppeteer, Railway

**Technologies/Frameworks:** React, Tailwind CSS, Django, Node.js, Scikit-learn, Next.js, NumPy, PostgreSQL, TensorFlow, REST APIs, MongoDB

## EXPERIENCE

### Embedded Software Developer — Kelpie Robotics

Sept 2025 – Present

*University of Ottawa, Ottawa, ON*

- Developed a **fast, portable 3D photogrammetry pipeline** enabling ROV-based 3D reconstruction within **90s capture and 300s processing**, meeting competition performance standards.
- Implemented GPU-accelerated **Structure-from-Motion (SfM)** and **Multi-View Stereo (MVS)** workflows with COLMAP, achieving  **$\pm 1$  cm** dimensional accuracy.
- Integrated live camera feeds (webcam, video, UDP/TCP ROV streams) with real-time progress tracking, timeout handling, and automated JSON/TXT competition report generation.
- Optimized capture and processing parameters via YAML configuration and detailed timing analytics, improving reconstruction efficiency by **40%**.

### Software Developer — Local Startup

Oct 2024 – Present

*Startup, Ottawa, ON*

- Built and maintained both frontend and backend systems for UniVork, a LinkedIn-style platform for students.
- Developed the entire frontend using JavaScript (React) and CSS, including the dashboard, messaging system, and user profiles.
- Implemented backend features with Django, including RESTful APIs, user authentication, and data storage.
- Collaborated on product design, feature planning, and database schema to support a scalable platform.

## PROJECTS

### Kairo — AI University Assistant

July 2025

*Next.js, TypeScript, React, Python, Django, PostgreSQL, OpenAI GPT-4o mini, Tailwind CSS, Vercel, Railway*

- Architected a full-stack AI assistant processing **2,600+ courses across 80+ programs**, cutting student course planning time from **hours to minutes** by integrating GPT-4o mini with dynamic scheduling logic.
- Developed **Kairoll**, a multi-constraint timetable optimizer achieving **95% accuracy** through custom scheduling algorithms and real-time data synchronization.
- Enhanced query understanding with a custom NLP engine parsing **50+ query patterns** using GPT-4o mini, ensuring high reliability and responsiveness.
- Developed automated web scrapers (Node.js + Puppeteer) to collect course and professor data, and deployed a Dockerized Django REST API (JWT + PostgreSQL) scalable for over 1,000+ concurrent users.

### Premier League Match Predictor — ML Powered Football Analytics

October 2025

*Python, scikit-learn, Random Forest, Next.js, Pandas, NumPy, FBref API*

- Predicted home and away goals for **380+ Premier League matches** with **MAE under 1.0** using dual Random Forest regression models and ensemble learning.
- Developed a **17-feature pipeline** extracting attack/defense strength, recent form, and head-to-head metrics to enhance predictive accuracy.
- Delivered real-time match outcome probabilities via a **pickle-serialized model** and REST API trained with an **80/20 validation split**.