Nathan El-Khoury

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EDUCATION

Carleton University   April 2026
Honours BCS. of Computer Science; Math Minor; AI & ML Stream   GPA: 3.97/4.0

- **Relevant Courses:** Artificial Intelligence, Machine Learning, Neural Networks, Database Management, Data Structures and Algorithms, Algorithm Analysis and Design, Operating Systems, Statistics, Linear Algebra

EXPERIENCE

Machine Learning Engineer Intern   May 2025 - Present
Trend Micro - Reports Team   *Python, FastAPI, Flask, LangGraph*

- Led development of a multi-agent LLM compliance system converting natural language queries into on-demand visual reports for 10,000+ customers, cutting delivery time from weeks to under 30s
- Built MCP servers and a multi-server router mapping intents to 4+ MCP servers and 60+ APIs with 95% accuracy
- Orchestrated a LangGraph flow spanning NLP, data retrieval, and visualization, autonomously resolving 90% of user queries

Machine Learning Engineer Intern   Sept 2024 - May 2025
J-Squared Technologies - FALC AI Team   *Python, PyTorch*

- Built Python synthetic data framework, boosting data variety, raising model accuracy 25% and cutting false positives 30%
- Engineered a multi-object tracking evaluation pipeline with dynamic ReID, enabling thorough performance analysis
- Developed a CNN-LSTM rock fall classifier in Pytorch, achieving 92% accuracy under varying environmental conditions

Software Engineer Intern   May 2024 - Sept 2024
J-Squared Technologies - FALC AI Team   *Python, Typescript, NextJS, NestJS*

- Optimized computer vision pipelines for edge devices by introducing parallel computing, increasing FPS by 30%
- Developed a real-time video analytics interface in NestJS/Next.js with AWS S3 integration for ML-powered security systems
- Led development of a rockfall classification system and ETL pipeline, securing $500k+ in contracts from conferences

Software Engineer Intern   Sept 2023 - Dec 2023
Apption Software - Datahunter AI Team   *C#, Python*

- Created an NLP-driven keyword extraction using TF-IDF and word co-occurrence, boosting enterprise processing 5×
- Architected the Datahunter Query Language using a customized command-pattern backend and integrated it into the Blazor frontend, enabling complex user queries while accelerating query resolution time by 200%
- Overhauled the data catalog pipeline in Databricks, resulting in secure and automated data exports to Azure storage

Software Engineer Intern   May 2023 - Aug 2023
Starvoy Technologies - Hardware Team   *Python, C++, Typescript*

- Developed an SVM-based anomaly detection system using k-fold cross-validation, achieving 98% accuracy and reducing manual testing time by 30% in optical transceiver quality assurance
- Engineered LLM pipelines to automate optical transceiver report generation, cutting manual effort by 15 hours/week
- Built a ReactJS/Flask dashboard for hardware control, real-time diagnostics, and automated reports to unify workflows

PROJECTS

Machine Learning UFC Predictor ▭ ⬮ | *Pandas, Scikit-learn, SQL, Flask, ReactJS*

- Engineered features and developed an ensemble ML model (XGBoost + Logistic Regression) on historical fight data, achieving 86% accuracy in winner prediction, deployed with a ReactJS frontend and Flask backend for real-time predictions

Computer Vision Poker Game Theory Optimizer ⬮ | *Python, Ultralytics, Supervision, OpenCV*

- Built YOLOv8+ByteTrack card tracking pipeline that streams detections into Monte Carlo simulations to compute win odds and optimal next move (fold / call / raise)

MRI Brain Tumor Detection ⬮ | *Python, Ultralytics, Optuna, Scikit-learn*

- Developed a CNN-based tumor detection system matching DenseNet's 86% accuracy at 1/3 the computational cost

SKILLS

Languages: Python, TypeScript, C++, C#, Java, JavaScript, SQL, Bash, HTML, CSS
Technologies: PyTorch, TensorFlow, Scikit-learn, Pandas, NumPy, ReactJS, NestJS, Next.js Flask, .NET, Blazor, Node.js
Databases/Tools: MySQL, MongoDB, FAISS, Chroma, PostgreSQL, Git, AWS, Azure, Docker, Kubernetes, Linux, Unix