

Juan Kaelig Minkoa

Regina, Saskatchewan | (306) 515-2951 | minkoajuan@outlook.com
linkedin.com/in/juan-minkoa | github.com/Kali2007thecodemaster

EDUCATION

University of Regina (Campion College)

Bachelor of Science, Mathematics & Computer Science | GPA: 3.7/4.0

Regina, SK

Expected Sep 2028

- **Relevant Coursework:** Linear Algebra I (98%), Probability & Statistics (98%), Calculus II (100%), Programming and Problem-solving (91%), Object-Oriented Design (88%), Number Theory & Combinatorics (Putnam Training).
- **Current Coursework:** Data Structures and Algorithms, Vector Calculus, Differential Equations, Introduction to Proof and Problem-solving .
- **Awards:** 1st Place Data Science Olympiad; Putnam Competition Team Member.
- **Research interests:** Matrix Analysis, Statistics, Combinatorics, Algebra, Machine Learning, Number Theory.

SKILLS

Scientific Computing: Python (NumPy, Pandas), Matplotlib, Jupyter, Scikit-Learn, Facebook Prophet.

Programming & Tools: C++ (Object-Oriented Analysis), SQL.

Languages: English (Native Proficiency), French (Native Proficiency).

Certifications: Databricks Generative AI (2025), Coursera Prophet Forecasting (2025), DataCamp Intro to AI (2025), Python (2025).

PERSONAL PROJECTS

Matrix Calculus & Optimization in Recurrent Networks | *Python, NumPy*

Jan 2026

- Constructed a Vanilla Recurrent Neural Network (RNN) using only linear algebra primitives to model sequential data.
- Derived Jacobian matrices for hidden state vectors (h_t) to analyze gradient flow and optimize differentiable memory.
- Addressed the vanishing gradient problem through explicit eigenvalue analysis of weight matrices during Backpropagation Through Time (BPTT).

Optical Character Recognition (OCR) via Linear Algebra | *Python, NumPy*

2025

- Architected a Multi-Layer Perceptron (MLP) from first principles to classify high-dimensional image data (MNIST), achieving 94% accuracy.
- Derived and implemented the chain rule for backpropagation across non-linear activation functions (ReLU, SoftMax) without using automatic differentiation libraries.
- Optimized weight convergence metrics through a manual implementation of Stochastic Gradient Descent (SGD).

Stochastic Modeling of Financial Time-Series | *Python, Prophet*

2025

- Engineered a stochastic predictive model to decompose financial data into trend, seasonality, and holographic noise components.
- Applied additive regression models to identify non-linear growth saturations and variance shifts in capital market data.

Statistical Regression & Valuation Analysis | *Python, Scikit-Learn*

2025

- Developed a multivariate regression model for real estate valuation, employing feature engineering to isolate orthogonal pricing variables.
- Conducted correlation analysis on 15+ economic indicators (GDP, Interest Rates) to quantify macroeconomic dependencies.
- Validated model robustness using K-Fold Cross-Validation, achieving an optimized RMSE suitable for investment decision-making.

Professional Experience

Marian Home

Operations Assistant (Volunteer)

Regina, SK

Sep 2024 – Present

- Responsible for the accurate collection of daily data regarding meal counts and resident attendance.
- Verified manual records against physical counts to ensure zero errors in monthly reporting.

LEADERSHIP & ACADEMIC INVOLVEMENT

Putnam Mathematical Competition: Team member engaging in intensive weekly seminars on advanced combinatorics, number theory, and proof construction.

Robotics & Electronics: Technical Lead for engineering challenges; applying algorithmic logic to hardware control systems.