# Kevin Ni

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## Education

**University of Toronto** — St. George Campus

*Bachelor of Applied Science and Engineering | Major in Robotics Engineering* — *2021 – 2026 (Expected)*

*Minor in Engineering Business | Minor in Artificial Intelligence*

- **Relevant Coursework:** Financial Engineering (In Prog.) Fundamentals of Accounting and Finance, Economic Analysis and Decision Making, Principles of Microeconomics, Probability and Statistics, Data Structures and Analysis (Python), Introduction to Artificial Intelligence (Python), Introduction to Learning from Data (Python), Applied Fundamentals of Deep Learning (Python).

## Technical Skills

**Programming**: Python, PyTorch, NumPy, Java, C/C++, Arduino, Linux, Bash Scripting/Powershell, Objected-Orientated Programming, Git, pandas, Matplotlib, ROS, Visual Studio
**Interests**: Financial Markets, Artificial Intelligence, Quantitative Finance, Machine Learning in Finance, Algorithmic Trading, Stochastic Calculus, Portfolio Optimization, Computational Finance

## Experience

**Junior Designer - Electrical** — May 2024 – May 2025 (Expected)

*Smith + Andersen* — *North York, ON*

- Designed and developed comprehensive electrical engineering drawings, including lighting and emergency lighting design, path of egress, security, power, and data systems using AutoCAD and Revit for high-profile tenant spaces.
- Performed detailed electrical calculations for sizing transformers, feeds, and panels, planning for electrical device consultation using those calculations to ensure efficient and reliable power distribution for tenant spaces.
- Conducted field surveys to assess existing, in-progress, and final conditions of renovation sites, recording data and reporting findings to architects and contractors to ensure alignment with design specifications and client satisfaction.
- Reviewed and processed billing and quotations to ensure accuracy and alignment with project budgets.

**Junior Mechatronics and Embedded Systems Specialist** — June 2023 – Oct. 2023

*Kevares Autonomous Services* — *Oshawa, ON (Remote)*

- Designed a real-time tracking, visualization, and control system for robot status and camera feed using ROS, Streamlit, and Python, resulting in a user-friendly dashboard accessible to local devices.
- Engineered back-end using ROS and Python (Object-Oriented Programing) to efficiently retrieve and publish robot endpoints and camera feeds, streamlining and enabling the functionality of two additional software programs.
- Developed software for stereo camera point cloud visualization using Open3D, enabling clients to efficiently visualize and track sidewalk deficiencies, resulting in quicker data analysis and decision-making.

**Systems - Drivers Member** — Oct. 2024 – Present

*aUToronto, University of Toronto* — *Toronto, ON*

- Developed and integrated life-cycle functionality into the existing camera driver code base using C++ and ROS2, automating the detection, configuration, activation, and shutdown of cameras, improving system reliability.
- Refactored existing camera drivers to increase code efficiency and readability, resulting in smoother integration for future developers and improved system performance.
- Compiled data for approximately 15 unique objects across 2000+ frames to refine and train the 3D object detection algorithm, improving the accuracy of machine learning models.

**Cashier Assistant** — Jul. 2021 – Dec. 2023

*Costco* — *Brampton, ON*

**Cashier, Barista, Cook** — June 2019 – Aug. 2021

*CoCo Fresh Tea and Juice* — *Brampton, ON*

## Projects

**Applied Fundamentals of Deep Learning Project, (APS360)** | *Python, PyTorch, NumPy* May 2025 – Aug. 2025

- Spearheaded the development of a novel audio generation system by implementing Test-Time Training (TTT) with a Diffusion Transformer (DiT) architecture, resulting in improved generation of long, coherent audio clips with reduced repetition and instability.
- Led data preprocessing for over 100,000 audio samples from AudioCaps and FSD50K datasets, using Python and FFmpeg to standardize, clean, and concatenate audio clips—enabling efficient training and model generalization across diverse audio classes.
- Benchmarked performance of a custom latent DiT audio generator against a lightweight Latent-LSTM baseline by defining objective evaluation metrics (length, repetition, clarity) and integrating an adaptive confidence-based gradient update loop—demonstrating superior model performance under memory constraints.

**Intro to Learning From Data Labs, (ROB313)** | *Python, NumPy, Matplotlib* Jan. 2024 – May 2024

- Implemented k-Nearest Neighbors for regression and classification, optimizing hyperparameters using cross-validation and comparing brute-force and k-d tree implementations.
- Developed gradient descent-based optimization for linear and logistic regression, evaluating full-batch, SGD, and momentum-based approaches for convergence trends.
- Constructed Radial Basis Function models with Gaussian kernels and Cholesky factorization, tuning hyperparameters via validation sets.
- Designed and trained a neural network for MNIST classification, achieving 95% validation accuracy through iterative hyperparameter tuning.

**Fundamentals of Accounting and Finance Integrated Project, (JRE300)** May 2023 – Jun. 2023

- Conducted comprehensive financial statement and ratio analysis of Caterpillar Inc. and its competitor Deere & Company using FactSet, identifying key liquidity, solvency, and profitability trends over two fiscal years to assess earnings quality and investor attractiveness.
- Built a discounted cash flow model to evaluate a $120M nuclear energy project investment for SafePowerCorp, incorporating tax shields, salvage value, and operating cash flows to compute NPV and IRR under fixed and market pricing scenarios.
- Estimated firm value using P/E-based comparables analysis and the CAPM model to project expected returns and compare intrinsic valuations of Caterpillar and Deere to current market prices, providing buy/sell recommendations based on valuation gaps.