

# KYLE WILSON

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<https://github.com/kywi4190/Projects>

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## TECHNICAL SKILLS

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- **Languages:** Python, C, C#, Java, SQL, R, HLSL
- **Frameworks & Libraries:** PyTorch, TorchRL, Gymnasium, NumPy, Pandas
- **Tools & Platforms:** Git, Docker, Linux, OpenAI APIs, Unity

## PROJECTS

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### Prompt to Math Visualization Generator (Python, Agentic AI)

- Local website converts natural language prompts into 25-45 second animated math explanation inspired by 3Blue1Brown.
- Designed multi-agent architecture (generator, critic, then error handler) to improve reliability and reduce hallucinations.
- Automated scene planning, code sanitation, animation, subtitles and text-to-speech voice overlay (with OpenAI TTS).

### Drought Prediction from Beetle Imagery (Python, PyTorch, Transfer Learning)

- Built ensemble model predicting drought severity from beetle images using DINOv3 and BioCLIP2 vision transformers
- Designed specialized architecture with target-specific heads to eliminate gradient interference.
- Implemented probabilistic regression with Gaussian uncertainty estimation, optimized for CRPS competition metric.

### Inverted Double Pendulum Reinforcement Learning (Python, PyTorch, TorchRL, Gymnasium MuJoCo)

- Implemented PPO algorithm to balance double pendulum with continuous control, trained policy over 1M environment steps
- Maintained balance for 1000+ timesteps under deterministic evaluation and verified performance across fresh environments.

### Deep Learning Handwritten Digit Classifier (C#, Unity)

- Implemented a neural network from scratch (no ML libraries) to classify MNIST handwritten digits with 95% accuracy.
- Designed custom backpropagation, loss calculation and modular deep learning workflow for use in other projects.

### Procedural Graphics & Simulations Projects (C#, HLSL, Compute Shaders)

- Volumetric clouds, terrain generation, L-system fractals, physics simulation using custom shaders and compute pipelines.

## EXPERIENCE

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### Software Development Intern, Alphinat, Montreal

Summer, 2024

- Implemented and tested new backend features for a low-code platform using .NET, contributing to production releases.
- Developed and validated CRUD workflows interacting with REST APIs, improving reliability and feature compliance.
- Collaborated in agile sprint planning, gaining experience in professional SWE workflows in a team setting.

### Alternative Investments Summer Intern, Ninepoint Partners, Toronto

Summer, 2023

- Created slide decks of alternative investment strategies which were used in new client pitches and client update presentations.
- Conducted research on and supported due diligence efforts for potential investment sub-advisors.

### Private Equity Analyst Summer Intern, 1251 Capital Group, Ottawa

Summer, 2022

- Constructed public company valuation models, performed valuation analysis, and pitched for potential investments.
- Built simplified minority leveraged recapitalization model in Excel from scratch.

### Program Participant, SHAD Canada, Ottawa

Summer, 2021

- Chosen for prestigious STEM-entrepreneurship program run by 19 universities across Canada.
- Developed and pitched eco-friendly fertilizer (technical design and business structure) in a team to a panel of judges

## EDUCATION

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### Bachelor of Science in Computer Science, Applied Math, University of Colorado Boulder, Boulder, CO

2023-Present

- Current GPA: 3.9
- Tau Beta Pi – National engineering honor society, invite only for top eighth GPA in Engineering
- **Relevant Courses:** Data Science, Linear Algebra, Algorithms, Software Development Tools, Data Structures
- Sigma Nu Fraternity – Ethical leadership development, personal growth and community service
- Study Abroad: UC3M, Madrid (2025)

### Bachelor of Science in Finance, Babson College, Wellesley, MA

2022–2023

- Babson Analyst Initiative (2022) – highly selective equity research and stock pitching program

## ADDITIONAL INFORMATION

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- Dual U.S. and Canadian Citizen
- Competitive athlete with 15+ years of experience in teamwork, leadership, and thriving under stress
- National Collegiate Rugby, National Champions – played wing on the starting lineup for Babson College (2023)
- Undefeated USA Amateur Boxer