

Alex Doyoon Kim

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EDUCATION

Bachelor of Science: Computer Science, University at Buffalo, Buffalo, New York *December 2025*

• GPA: 3.63

INTI International College Penang (American Degree Transfer Program) *March 2018 – May 2020*

WORK & RESEARCH EXPERIENCE

Undergraduate Researcher (Full-time Summer Internship) — University at Buffalo *May 2025 – August 2025*

- Contributed to AITIA Project, a behavioral type system that captures causal dependencies in message-passing protocols to ensure properties like deadlock freedom through types
- Verified formal theorems in Rocq by developing machine-checked proofs for key results

Undergraduate Researcher — Pirouette Project, University at Buffalo *January 2024 – May 2025*

- Contributed to Pirouette, the first language for typed higher-order functional choreographic programming via endpoint projection into programs for each node in a **distributed system**
- Developed an AST visualizer tool to use for **compiler verification**
- Developed the type inference algorithm using unification algorithm for Pirouette's type system in OCaml
- Developed 100+ **automated unit tests** using OUnit2 in OCaml to ensure correctness and prevent regressions

Undergraduate Teaching Assistant — University at Buffalo *August 2024 – December 2025*

CSE 250: Intro to Data structures

- Aided with introducing the design, implementation, and properties of advanced data structures for a class of 350+ students per semester

CSE 305: Intro to Programming Languages

- Aided with introducing the concepts such as strong typing, data abstraction, higher-order functions, polymorphisms, and more found in programming languages for a class of 300+ students per semester
- Conducted weekly recitations, office hours, and proctored quizzes and exams for both classes

Undergraduate AI/ML Research — University at Buffalo *August 2025 – December 2025*

- Developed core ML classifiers such as Naïve Bayes, KNN, and neural network based classifiers
- Developed multilayered neural network models using Python with PyTorch and Keras libraries
- Proficient in key ML algorithms/concepts such as K-means, RBF (Radial Basis Function), SVM, Backpropagation, Convolutional Neural Network, Reinforcement Learning, and Transformers

SKILLS & TOOLS

Languages: C, C++, Java, Python, Haskell, OCaml, Go, React

Tools/Testing: Jupyter, Docker, PyTorch, Keras, spaCy, JUnit, OUnit2

Skills: Git Workflow, Agile Methodology (Jira, Trello)

Proof Assistants: Coq, Rocq, Agda

Frontend: HTML5, CSS, Javascript

Backend: MongoDB, MySQL, Flask

LEADERSHIP & CLUBS

UB DBPL (August 2024 - Present):

- Member - University at Buffalo Databases and Programming Languages Group

Republic of Korea Army (May 2022 - March 2023):

- Team Leader - Managed 60+ individuals in administrative and training related tasks.

INTI College Penang (July 2018 - August 2019):

- 2018/19 President of AUPEC: American Degree Transfer Program Executive Committee, a student body government; Oversaw 10+ charity and social events for 500+ students