Kyung Min (Brian) Ko

[U.S. Permanent Resident]
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Education

University of Washington, Seattle Sep 2025 - June 2027
Master of Science in Electrical and Computer Engineering **GPA:** –

Purdue University, West Lafayette Aug 2019 - May 2024
Bachelor of Science in Electrical Engineering, graduated *with distinction* **GPA: 3.94/4.00**

- *Leave of absence for military service for 2 years*
- TA: ECE 570 Artificial Intelligence **(graduate)**, ECE 20875 Python for Data Science, ECE 20007
- Coursework: Artificial Intelligence **(graduate)**, Statistical Machine Learning **(graduate)**, Natural Language Processing **(graduate)**, Digital Signal Processing **(graduate)**, Probabilistic Method

Research interest

Agentic AI, Reinforcement Learning, LLM

Publication

Brian Ko, Jim Lim, Ziyu Gong, David Inouye. A Unified Framework for Comparing Distribution Matching Methods Across Trustworthy Machine Learning Tasks. *Submitted to AISTATS 26* [Paper].

Brian Ko*, Han Wang*, Haoyu Li, Huan Zhang. On The Fragility of Benchmark Contamination Detection in Reasoning Models. *Submitted to ICLR 26* ***Initial score 8/6/6. (Top 2% submission)*** [Paper].

Brian Ko. Backward Curriculum Reinforcement Learning. *IEEE RO-MAN (Oral), 2023* [Paper].

Brian Ko. V-advCSE: Virtual Adversarial Contrastive Learning for Sentence Embeddings. *Project script, 2023* [Paper].

Brian Ko, Nan Jiang, Lin Tan. Exploiting Code Language Models and Contrastive Learning in Binary Code Authorship. *Project script, 2023* [Paper].

Experience

Research Assistant Aug 2025 - Present
UIUC (remote), Champaign, IL. ***Advised by Prof. Jiaxuan You***
- Analyzed and defined failure trajectory taxonomies for embodied and GUI-based VLM agents, and developed an automated evaluation pipeline.
- Designing a self correction method leveraging reversible action pairs from failure trajectory.

Research Assistant Aug 2024 - Present
UIUC (remote), Champaign, IL. ***Advised by Prof. Huan Zhang*** **Submitted to ICLR 26**
- Investigated benchmark contamination in large reasoning models, showing that RL with GRPO/PPO style objectives can conceal contamination introduced during SFT with providing theoretical analysis.
- Designed and implemented a unified experimental pipeline evaluating 10 state of the art contamination detection methods
- Demonstrated that chain of thought SFT contamination on advanced LRMs can substantially boost leaderboard scores while causing most existing memorization based detection methods to perform near random

Research Assistant May 2024 - Present
Purdue University, West Lafayette, IN. ***Advised by Prof. David I. Inouye*** **Submitted to AISTATS 26**
- Conducted research focusing on critical aspects of trustworthy machine learning, including calibration, domain adaptation, and fairness.
- Developed a unified framework for trustworthy distribution matching, incorporating methods such as Sinkhorn, MMD, and adversarial learning to address calibration, domain adaptation, and fairness tasks.
- Demonstrated the effectiveness of various DM methods for calibration, domain adaptation, and fairness, providing practical insights into selecting appropriate DM methods.

NSF Summer Undergraduate Research Intern [Paper & Code] May 2023 - Jan 2024
Purdue University, West Lafayette, IN. ***Advised by Prof.Lin Tan***
- Discovered the application of code language models for malware author classification
- Engineered a novel approach for function-level learning, transitioning from traditional file-level input
- Incorporated contrastive learning methodologies to address code authorship tasks, eliminating the need for labels

Human Resource Manager Nov 2021 - May 2023
Republic of Korea Army, South Korea
- Optimized the boundary protection schedule system by automating processes with programming
- Facilitated proper troop assignments by documenting the transferring process, considering current unit status

- Recognized for developing an AI object tracking system used in the guardroom, awarded by the chief of the general staff of the army

NSF Summer Undergraduate Research Intern [Code] Jun 2021 - Jan 2022
Georgia Tech, Georgia, Atlanta. ***Advised by Prof.Siva Theja Maguluri*** **IEEE ROMAN (Oral) 23**
- Implemented REINFORCE, A2C, and PPO algorithms applicable to both continuous and discontinuous action spaces
- Proposed a novel backward curriculum learning, enhancing sample efficiency via reverse order training
- Evaluated performance on different architecture settings to provide insight on choosing proper architecture

Projects

Guardroom Object Tracking System [Code] Jun 2022
Awarded commandment by the chief of the general staff of the army
- Developed a multi-object tracking system using Yolo-v4 and Deep Sort for automated CCTV surveillance in guardrooms
- Enhanced unit security by tracking objects entering selected regions and calculating real-time moving average distances to display object trajectories

Teaching Experience

Teaching Assistant – ECE 20007 [course description] Fall 2020 – Spring 2021
Purdue University, West Lafayette, IN **Electrical Engineering Fundamentals I Lab**
- Led weekly lab sections for **30** students with a GTA; demoed instrumentation (oscilloscope, function generator) and guided teams through circuit debugging.
- Graded lab reports using a rubric focused on experimental rigor and data visualization; delivered line-item feedback for future improvement.

Teaching Assistant – ECE 20875 [course description] Fall 2023
Purdue University, West Lafayette, IN **Python for Data Science**
- Developed and refined homework sets on **data science**, **data structures**, and **Python programming**.
- Graded exams/homework for **126** students on **Gradescope**; held **12 hrs/wk** office hours and resolved questions in person and on Piazza.

Teaching Assistant – ECE 57000 (Graduate) [course description] Spring 2024
Purdue University, West Lafayette, IN **Artificial Intelligence**
- Designed exams with the GTA and professor; proctored and graded midterms/finals for **270** graduate students using **Gradescope**.
- Improved homework problems in **optimization** and **machine learning**; provided reference code in **PyTorch**.
- Ran weekly office hours **12 hrs/wk** to debug proofs and code; created reusable walkthroughs for recurring conceptual hurdles.

SKILLS

Programming Languages: Python, C++, Java

Software: Pytorch Lightening, Hydra (for ML experiment), TensorFlow

Honors

Dean's List & Semester Honors All semester

NSF Summer Research Fellowship 2021,2023