Kyung Myung Ko

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Education

Purdue University, West Lafayette IN Expected May 2025
Bachelor of Science in Computer Science and Artificial Intelligence GPA: 3.73/4.0

Coursework

Computer Vision with Deep Learning, Natural Language Processing, Data Mining And Machine Learning, Intro to Robotics, Intro to Artificial Intelligence, Intro to the Analysis of Algorithms, Linear Algebra, Data Structures

Natural Language Processing with Deep Learning(*Stanford CS224N*), Deep Learning for Computer Vision(*U Michigan EECS 498-007/598-005*), Multimodal Machine Learning(*CMU 11-777*), Intro to Deep Learning(*MIT 6.S191)*

Experience

Research Intern, *National Institute of Astrophysics, Optics and Electronics, Mexico* Jun 2024 - Aug 2024
Advisor: Dr. Manuel Montes-y-Gómez

- Incorporated OpenSmile and RoBERTa for acoustic and speech cross-modal generalization for toxicity detection.
- Replicated the baseline on the multiligual & multimodal hate speech detection task with the MuTox dataset.
- Attended NAACL 2024 in Mexico City, engaging in posters and workshop sessions to stay relevant with the state-of-the-art in NLP research

Research Assistant, *Purdue University, West Lafayette IN* May 2023 - Oct 2023
Advisor: Dr. James Davis {Paper} {Code}

- Developed Python scripts to aggregate PGP signatures on open-source registries and analyzed their qualities.
- Contributed to the methodology section of research paper, reviewed and published to IEEE S&P'24.

Research Intern, *Northwestern University, Evanston IL* Jun 2021 - Aug 2021
Advisor: Dr. Marcelo Worsley {Slides} {Code}

- Applied GRU and LSTM for the multi-class classification and determined the distinct EEG brainwave states.
- Incorporated the trained models for the real-time signal conversion interface to play the game Minecraft.

Caterpillar Corporate Partner Researcher, *Purdue University, West Lafayette IN* Aug 2020 - May 2021
Advisor: Sridhar Ramaswamy {Poster} {Code}

- Replicated a baseline GAN model and performed data imputation on the multivariate time series data.
- Processed the noisy data and applied adversarial training algorithm for regression, evaluating with L1 & L2 loss.

Publication

(1) Signing in Four Public Software Package Registries: Quantity, Quality, and Influencing Factors

Taylor R Schorlemmer, Kelechi G Kalu, Luke Chigges, **Kyung Myung Ko**, Eman Abdul-Muhd Abu Isghair, Saurabh Baghi, Santiago Torres-Arias, James C Davis

Proceedings of the 45th IEEE Symposium on Security and Privacy (S&P) 2024.

Projects

Audio-Visual AGreement for MUSIC-AVQA May 2024
Personal Research Project {Preprint} {Code}

- Developed agreement and alignment module to maximize joint information between audio and visual features.
- Applied Kl divergence to minimize multimodal agreement and cosine similarity to maximize unimodal alignment.
- Evaluated with MUSIC-AVQA benchmark, brought improvement on multimodal existential reasoning ability.

Music Selector Oct 2022
Personal Project {Code}

- Aggregated a custom music dataset, trimmed the relevant audio for efficient compute and extracted MFCC.
- Utilized 2-D CNN architecture for the multi-class classification and achieved 90% accuracy on test set.

Teaching & Service

Teaching *Problem Solving And Object-Oriented Programming* **SP24, FA23**, Purdue University

Service *Purdue Korean Association Recruiting Manager* **2023-2024**, Purdue University
Data Processing Manager **2021-2023**, Republic of Korea Army
Hello World Hackathon Mentor **2020**, Purdue University

Honors & Skills

Honors *CS Department Outstanding Student in AI* **2024**, Purdue University
Dean's List **2019, 2020, 2021, 2023, 2024**, Purdue University
Excellence in Annual headquarters security audit **2022**, Republic of Korea Army
Academic Excellence in Telecommunications Military Training School **2021**, Republic of Korea Army

Skills Python, PyTorch, NumPy, OpenCV, PIL, librosa, Bash