

# Bryan Wong

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## INTERESTS

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Computer Vision, Medical Image Analysis, Multimodal Learning, Vision-Language Model

## EDUCATION

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### KAIST

*Doctor of Philosophy in Graduate School of Data Science*

Daejeon, South Korea

*Aug. 2023 – Aug 2027*

### KAIST

*Master of Science in Graduate School of Data Science*

Daejeon, South Korea

*Aug. 2021 – Aug 2021*

### NTUST

*Bachelor of Science in Computer Science and Information Engineering*

Taipei, Taiwan

*Sep. 2018 – June 2021*

## RESEARCH EXPERIENCE

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### Graduate Research Assistant

Sep 2021 – Present

*KAIST*

*Daejeon, South Korea*

- Pioneered the integration of hierarchical heterogeneous graph structures with vision-language models (VLMs), enabling coarse-to-fine modeling of tissue architecture in gigapixel images (WSIs).
- Developed a weakly-supervised multiple instance learning (MIL) framework for light microscope images, addressing redundancy and missing spatial coordinates via representative instance selection (RIE) for graph-based learning.
- Systematically evaluated MIL feature extractors across pre-training dataset, backbone architecture, and pre-training method to address the lack of guidance in feature selection.
- Designed a patch recommendation module that filters noisy instances in real-world datasets, reducing pathologist annotation workload while improving diagnostic accuracy over existing methods.

### Undergraduate Research Assistant

Aug. 2020 – Aug 2021

*NTUST*

*Taipei, Taiwan*

- Developed a movie genre classification model leveraging posters, subtitles, text statistics, facial expressions, and trailers to classify movies into nine genres, achieving 82% accuracy.

## PUBLICATIONS

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- **Wong, B.\***, Kim, J.\*, Fu, H., Yi, M. Y. “Few-Shot Learning from Gigapixel Images via Hierarchical Vision-Language Alignment and Modeling.” **NeurIPS (2025)**
- **Wong, B.\***, Kim, J.\*, Fu, H., Quiñones Robles, W. R., Yi, M. Y. “MicroMIL: Graph-Based Multiple Instance Learning for Context-Aware Diagnosis with Microscopic Images.” **MICCAI (2025)**
- **Wong, B.**, Hong, S., Yi, M. Y. “Rethinking Pre-Trained Feature Extractor Selection in Multiple Instance Learning for Whole Slide Image Classification.” **IEEE ISBI (2025)**
- **Wong, B.**, Yi, M. Y. “PreMix: Label-Efficient Multiple Instance Learning via Non-Contrastive Pre-training and Feature Mixing.” **Preprint (2025)**

## PUBLICATIONS (CO-AUTHORED)

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- Kim, J.\*, Chu, S.\*, **Wong, B.**, Yi, M. Y. “Not All Options Are Created Equal: Textual Option Weighting for Token-Efficient LLM-Based Knowledge Tracing.” **EMNLP Findings (2025)**
- Kim, J., Chu, S., Park, H., **Wong, B.**, Yi, M. Y. “Leveraging Multi-facet Paths for Heterogeneous Graph Representation Learning.” **CIKM (2025)**
- Chu, S.\*, Kim, J.\*, **Wong, B.**, Yi, M. Y. “Rationale Behind Essay Scores: Enhancing S-LLM’s Multi-Trait Essay Scoring with Rationale Generated by LLMs.” **NAACL Findings (2025)**
- Quiñones Robles, W. R., Noree, S., Ko, Y. S., **Wong, B.**, Kim, J., Yi, M. Y. “Leveraging Spatial Context for Positive Pair Sampling in Histopathology Image Representation Learning.” **Preprint (2025)**

- Hong, S., Park, H., Ko, Y., Lee, S., **Wong, B.**, Yi, M. Y. “Towards Classifying Histopathological Microscope Images as Time Series Data.” **IEEE ISBI (2025)**
- Kim, M., Quiñones Robles, W. R., Ko, Y. S., **Wong, B.**, Lee, S., Yi, M. Y. “A Predicted-Loss Based Active Learning Approach for Robust Cancer Pathology Image Analysis in the Workplace.” **BMC Medical Imaging (2024)**
- Dong, W., **Wong, B.**, Bhatti, H. I., Kim, L., Cha, M. “Analyzing Gender Pay Gap in STEM Fields by Life Trajectory.” **International Conference on Computational Social Science (IC2S2) and Korea Computer Congress (KCC) (2022)**

## ACADEMIC SERVICES

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- **Reviewer:** MICCAI 2025
- **Student Volunteer:** MICCAI 2025

## TECHNICAL SKILLS

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- **Languages:** Python, R, Go, C++
- **Deep Learning Frameworks:** PyTorch, PyTorch Lightning
- **Developer Tools:** Git, VS Code, Visual Studio

## WORK EXPERIENCE

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### Data Engineer Intern

Oct 2020 – Aug 2021

*Commerce Connector by PriceSpider*

*Taipei, Taiwan*

- Designed and implemented web crawling pipelines to collect pricing data for Buy Now Online (single store) and Buy Now In Stores (multi-store price comparison).
- Migrated ParseHub to an enterprise-scale crawling environment, optimizing efficiency and scalability.
- Integrated PriceSpider crawler by configuring API-based subscriptions, setting up an EC2 receiver, processing raw data through AWS Lambda, and storing structured feeds in Amazon S3.
- Led the Data Engineering team, conducting monthly strategy meetings to enhance data collection and processing workflows.

### Back End Engineer Intern

July 2020 – Sep 2020

*Aurora Tech*

*Taipei, Taiwan*

- Designed and implemented RESTful APIs using IRIS (Go Web Framework) to facilitate seamless communication between services.
- Integrated multiple game providers, enabling functionalities such as user authentication, balance retrieval, deposit/withdrawal processing, and game result settlement (both settled and unsettled).
- Refactored and optimized game provider code, improving system efficiency, maintainability, and scalability.

## HONOR & AWARDS

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- **KAIST International Graduate Scholarship (2021–2027):** Fully-funded Master’s and Ph.D. scholarship covering tuition, living expenses, and national health insurance.
- **Minister, Overseas Community Affairs Council, Republic of China (Taiwan) (2020):** Awarded for outstanding academic performance and dedication.
- **ICATI Jakarta Scholarship Award (2021):** Awarded by the Indonesian Taiwan Alumni Association (ICATI) for outstanding performance in the 2020 academic year.

## SUMMER SCHOOL

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- **Oxford Machine Learning (OxML) 2024:** Selected participant in the OxML 2024 program, focusing on MLx Health & Bio, MLx Representation Learning, and Generative AI tracks.

## ONLINE COURSES

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- **AI for Medical Diagnosis**, DeepLearning.AI: Covers AI applications in medical practice, including diagnosis, health prediction, and treatment recommendation.
- **Machine Learning**, Stanford University: Provides a broad introduction to modern machine learning, including supervised and unsupervised techniques.

## SOCIAL SERVICE

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- **Member of Project Let's Go (2020)**: Taught English and STEAM subjects at Chishang Junior High School through hands-on experiments and coding sessions.