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# Ting-Wen (Kathy) Ko

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kerkathy

## Research Interest

Causal reasoning, trustworthy AI, AI safety, model interpretability

## Education

**M.Sc., Computational Statistics and Machine Learning,** University College London (in London, UK) **Sep 2024 — Sep 2025**

- Courses: Probabilistic and Unsupervised Learning, Supervised Learning, Bayesian Deep Learning, Statistical Model and Analysis, Open-Endedness and General Intelligence, Statistical NLP
- Supervised by Mengyue Yang and Jun Wang.

**M.Sc., Computer Science,** National Taiwan University (in Taipei, Taiwan) **Sep 2022 — Jun 2024**

- GPA: 4.17/4.3
- Supervised by Pu-Jen Cheng and Jyun-Yu Jiang.
- Thesis: Enhancing Retrieval Augmented Generation with Passage Combination.

**B.Sc., Undergraduate Honors Program of Electrical Engineering and Computer Science** **Sep 2018 - Aug 2022**

National Yang Ming Chiao Tung University (Previously National Chiao Tung University) (in Hsinchu, Taiwan)

- Overall GPA: 3.93/4.3

## Research and Work Experience

**University College London** **Apr 2025 — Current**

Master's Thesis Research

- Exploring spurious correlation in LLMs from the perspective of OOD detection.

**MediaTek Research UK** **Jun 2024 — Aug 2024**

Deep Learning Intern

- Researched on the model representation when LLM reasons, layer optimization through adaptive pruning, and diffusion model techniques to improve transformer-based language models.

**National Taiwan University** **Sep 2023 — Jun 2024**

Master's Thesis Research (Link: 🔗) (Code: )

- Developed an end-to-end trainable dense passage retriever that optimizes passage combination selection for retrieval-augmented QA with LLM
- Implemented comprehensive baseline systems, including sparse/dense retrieval and reranking methods

**Global Media Team, Yahoo!** **Sep 2023 — Dec 2023**

Project Intern (Code: )

- Researched on multitask learning approaches for text readability assessment.
- Implemented unsupervised learning-to-rank to predict a comprehensive readability signal.

**Global Media Team, Yahoo!** **Jul 2023 — Aug 2023**

Research Engineering Intern

- Designed an internal LLM chatbot with vector database integration for Yahoo news articles.
- Applied retrieval-augmented generation methods for improved explainability and diverse search result by max marginal relevance search and asymmetric embeddings.

## Selected Projects

**Deconstructing LLM Faithfulness** (Python) **Feb 2025 — Current**

- Revisited existing faithfulness tests from a causal framework.
- Investigate the application of RL techniques to train language models using faithfulness as a reward metric.
- Research areas: causality, RL fine-tuning, AI safety, trustworthy AI

**BANDITPROMPT: Steering Creativity in Image Generation** (Python / LLMs / Diffusion Models) **Feb 2025 — Current**

- Developed a novelty search-based approach for generating diverse sets of images using LLM prompt optimization.
- Implemented a Beta-Thompson multi-armed bandit algorithm to adaptively select specialized mutation strategies.
- Conducted comprehensive evaluations demonstrating superior diversity metrics compared to existing baselines.
- Research areas: Generative AI, evolutionary algorithms, multi-armed bandits, prompt optimization

## Skills

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|---|---|
| **ML/AI** | Large Language Models, Retrieval-Augmented Generation, Language Modeling, Transformer Architectures, Causal Inference, Evolutionary Algorithms |
| **Programming** | Python, PyTorch, HuggingFace, C/C++, Java, SQL |
| **Toolkits** | Git, Linux, Pandas, NumPy, Scikit-learn, NLTK, Streamlit |