Peng-Ting (Dean) Kuo

✉ deankuopt@gmail.com | 🏠 deankuo.com | ⌨ github.com/deankuo | 🔗 linkedin.com/in/deankuo | 🎓 Peng-Ting Kuo

Education

National Taiwan University (NTU)   *Taipei, Taiwan*
Master of Arts in Political Science   *Sep 2021 - Nov 2024*
- Overall GPA: **3.94/4.0**
- Thesis: The Impact of Electoral Reform on Legislators' Campaign Strategies: An Application of Large Language Models
- Related courses: Probability and Statistics, Linear Algebra and Its Applications, Applied Deep Learning, Programming for Business Computing, Natural Language Processing and Its Applications, Data Science and Social Inquiry

Academia Sinica   *Taipei, Taiwan*
Institute for Political Methodology   *Jul 2022 - Jul 2022*
- Related courses: Causal Inference, Survey Experiment, Regression Discontinuity Design, and Causal Mediation Analysis

National Taiwan University (NTU)   *Taipei, Taiwan*
Bachelor of Arts in Political Science and Minor in Economics   *Sep 2017 - June 2021*
- Last two years GPA: **3.98/4.0**
- Overall GPA: 3.58/4.0
- Related courses: Calculus, Microeconomics, Macroeconomics, Statistics and Econometrics with Recitation

Work Under Review

"**LLMs are Biased Evaluators: But Not Biased for Retrieval Augmented Generation**." *arXiv preprint arXiv: 2410.20833, 2024, with Yen-Shan Chen, Jing Jin, Chao-Wei Huang, Yun-Nung Chen*

"**Explaining China's Security Policy under Xi Jinping: A Neoclassical Realist Approach**." *Submitted, with Ronan Tse-Min Fu, Yu-Ning Chiu*

"**Democracy or Prosperity? A Cross-National Analysis of East Asian Countries**." *Submitted, with Ronan Tse-min Fu, I-Lien Lee, Chia-Hsiang Han, Yu-Ning Chiu*

Conference Presentation

"**Explaining China's Security Policy under Xi Jinping: A Neoclassical Realist Approach**." *Presented at The Prospect Foundation Conference. Taipei, Taiwan, August 30, 2024. (with Ronan Tse-Min Fu, Yu-Ning Chiu)*

"**From Human-Label to Auto-Label: An Automatic Classification Model for Legislators' Oral Question**." *Presented at The 16th International Conference on Parliamentary Studies. Taipei, Taiwan, Jun 15-16, 2024. (with Yu-Hung Sun, Chun-Ming Tsui, and Hong-Wung Wang)*

"**Decoding Campaigning Strategies: A Machine Learning Approach to Understanding the Impact of Election Systems on Legislative Candidates**." *Presented at The 81st Annual Midwest Political Science Association Conference (MPSA). Chicago, United States, Apr 4-7, 2024. (with Ronan Tse-Min Fu)*

"**Democracy or Prosperity? A Cross-National Analysis of East Asian Countries**." *Presented at 2023 Asian Barometer Survey Conference. Taipei, Taiwan, Jun 13, 2023. (with Ronan Tse-min Fu, I-Lien Lee, Chia-Hsiang Han, Yu-Ning Chiu, and Ronald Pernia)*

Professional Experience

Institute of Political Science, Academia Sinica   *Taipei, Taiwan*
Research Assistant   *Mar 2022 - Nov 2024*
- Engineered datasets and conducted statistical analysis on cross-national data from twelve East Asian countries using Python and R, contributed to a publication at the Asian Barometer Survey Conference 2023
- Developed and curated a 2-million-entry news database from China's People's Daily. Trained classification models using PyTorch and RoBERTa framework, achieving 96% accuracy in identifying international news
- Developed and maintained an events database on UK-Germany relations, consolidating a comprehensive resource and literature reviews for the book project and regularly reporting progress to the team

Department of Computer Science & Information Engineering, NTU   *Taipei, Taiwan*
Research Assistant   *Aug 2024 - Nov 2024*
- Optimized research design and evaluated bias in LLMs (GPT, LLaMA) using the Retrieval-Augmented Generation (RAG) framework, incorporating social science experimental methodology
- Curated and analyzed 1000+ paired human-AI annotated datasets, developed visualization tools for bias assessment, contributing to a paper submission to The 31st International Conference on Computational Linguistics (COLING)

Institute of Sociology, Academia Sinica   *Taipei, Taiwan*
Research Assistant   *Apr 2024 - Nov 2024*
- Analyzed 600+ WTO Dispute Settlement Body cases and 8000+ documents using social network analysis uncovering key patterns and relationships between countries
- Designed data pipeline from scratch, including web scrapping, text pre-processing, and data analytics, improving data accessibility for further research

Invited Talk

Exploring an Interdisciplinary Academic Career in Data Mining and NLP *2024*
Department of Political Science, Soochow University
- Guest lectured on applications of NLP in political science research during graduate statistics courses
- Led hands-on Python programming workshops demonstrating NLP implementation

Honor

Travel Grant for International Conference Participation, *Ministry of Science and Technology; NTU* *2024*
Encouraged students to attend international conferences, present research results and strengthen research capabilities

Diplomatic Scholarship, *Ministry of Foreign Affairs, Republic of China (Taiwan)* *2022*
Awarded students with outstanding academic performance and interests in diplomacy

Yu Ren-Huan Scholarship, *Department of Political Science, National Taiwan University* *2019*
Awarded to students with outstanding academic performance in the study of political science

Dean's List Award, *National Taiwan University* *2019*
Awarded students with outstanding academic performance

Teaching Experience

National Taiwan University (NTU) *Taipei, Taiwan*

Appied Deep Learning (CSIE5431) *Sep 2024 - Nov 2024*
- Served as a course teaching assistant, providing weekly office hours for student coding or model-tuning inquiries
- Graded natural language generation assignment for a graduate-level class of 170+ students

Computational Social Science (PS5697) *Feb 2024 - May 2024*
- Conducted weekly office hours, addressing code issues and project ideas in computational social science
- Instructed students in fundamental Netlogo programming syntax and library utilization

Basic Mathematics for Social Science (PS5710) *Sep 2023 - Dec 2023*
- Facilitated in-depth learning of calculus and linear algebra for graduate-level social science students

Social Network and Group Behavior (PS5705) *Feb 2023 - Jun 2023*
- Instructed students in R programming fundamentals for social network analysis and offered weekly support sessions

Seminar on Game Theory (PS5019) *Sep 2022 - Dec 2022*
- Supported graduate students in advanced game theory concepts through weekly office hours

Project

Legislator Manifesto Classification (Master's Thesis) *Feb 2023 - Jun 2024*
- Uncovered key relationships between electoral systems and candidates' strategies and contributed a complementary theory for electoral reform, enhancing understanding of campaign strategies in Taiwan
- Developed a novel classification pipeline using BERTopic, LDA models, and LLM-based prompt engineering with Chain-of-Thought and Least-to-Most, automating and improving objectivity in manifesto classification

Legislator interpellation Classification *Nov 2023 - Dec 2023*
- Addressed the high cost of manual annotation legislators' questioning classification tasks, significantly reducing resource requirements streamlining political text analysis
- Implemented a multi-label classification model for Taiwan legislator interpellations using Longformer and RoBERTa architectures, achieving a Hamming score of 0.84, equivalent to human coder inter-reliability

Predict House Price by House Description in Taipei *Nov 2022 - Nov 2022*
- Developed a machine learning algorithm to improve house seekers' filters by classifying house descriptions and features
- Transformed text using TF-IDF and developed models including Support Vector Machine and Random Forest to predict house prices and attained over 71% accuracy

Skills

Language	Mandarin, English(GRE 330/340 (V:160 Q:170), TOEFL 101/120 (R:24 L:27 S:23 W:27); Japanese
Programming	Python (PyTorch, Numpy, Pandas, BERTopic, Claude, OpenAI), R, Netlogo
Software Skills	LaTeX, Git, Linux(Ubuntu, Shell Scripting)