

Messi H.J. Lee

hojunlee@wustl.edu | lee-messi.github.io | [OSF](#) | [Github](#) | [Google Scholar](#) | [LinkedIn](#)

Research Interests

Bias in Natural Language Processing systems (e.g., **Homogeneity Bias**, racial stereotyping), AI Ethics, Responsible AI, Computational Social Science, Large Language Models, Text-as-data

Education

Washington University in St. Louis

Exp. 2025

- PhD in Computational and Data Sciences
 - Primary Graduate Student of the Diversity Science Lab (2020 -)
 - Advisors: Calvin K. Lai, Jacob M. Montgomery
- McDonnell International Scholar
- Graduate Student Affiliate, Center for the Study of Race, Ethnicity & Equity

Hong Kong University of Science and Technology

2017-2020

- BSc in Quantitative Social Analysis
- Capstone Project | Part-time Electoral Campaigns on Social Media
- Academic Achievement Medal & First Class Honors

Journal Publications

Lee, M. H. J., Montgomery, J. M., & Lai, C. K. (2024). America's racial framework of superiority and Americanness embedded in natural language. *PNAS Nexus*, pgad485.

<https://doi.org/10.1093/pnasnexus/pgad485> [[Github](#)] [[OSF](#)]

Conference Proceedings

Lee, M. H. J., Montgomery, J. M., & Lai, C. K. (Submitted). Large Language Models Portray Socially Subordinate Groups as More Homogeneous, Consistent with a Bias Observed in Humans.

Lee, M. H. J., Montgomery, J. M., & Lai, C. K. (2023). The Effect of Group Status on the Variability of Group Representations in LLM-generated Text. NeurIPS 2023 Socially Responsible Language Modelling Research (SoLaR) Workshop. [[OpenReview](#)] [[ArXiv](#)]

Work in Progress

Lee, M. H. J. & Lai, C. K. (in prep.). An alternative measure of homogeneity bias in LLMs.

Lee, M. H. J., Montgomery, J. M., & Lai, C. K. (in prep.). Racial Stereotyping in Multimodal LLMs.

Talks & Presentations

Lee, M. H. J. (Mar 2024). *Large Language Models Portray Socially Subordinate Groups as More Homogeneous, Consistent with a Bias Observed in Humans*. TRIADS “Messy” Data Meeting @ Washington University in St.Louis.

Lee, M. H. J., Lai, C. K., & Montgomery, J. M. (Feb 2024). *Outgroup Homogeneity-like Effect in Large Language Models*. Poster presentation @ The Society of Personality and Social Psychology Conference in San Diego, CA. [[Poster](#)]

Lee, M. H. J., Lai, C. K., & Montgomery, J. M. (Dec 2023). *The Effect of Group Status on the Variability of Group Representations in LLM-generated Text*. Poster presentation @ NeurIPS 2023 Socially Responsible Language Modelling Research (SoLaR) Workshop in New Orleans, LA. [[Poster](#)]

Lee, M. H. J., Montgomery, J. M., & Lai, C. K. (Feb 2023). *A Test of the racial position model in natural language*. Poster presentation @ The Society of Personality and Social Psychology Conference in Atlanta, GA. [[Poster](#)]

Lee, M. H. J. (April 2022). *Racial/ethnic stereotypes in natural language*. Social and Personality Psychology Brown Bag @ Washington University in St.Louis.

Lee, M. H. J., & Lai, C. K. (Feb 2022). *The spread of stereotypes on social media*. Virtual poster presentation @ The Society of Personality and Social Psychology Conference.

Lee, M. H. J., Keller, F., & Yang, J. (Aug 2020). *Central coordination patterns distinguish AstroTurfing from grassroots campaigns*. Virtual poster presentation @ Politics and Computational Social Science & Political Networks.

Skills

Tools (Environments & IDEs)

- RStudio, Visual Studio Code, Jupyter Notebook, Github, Google Colab

Natural Language Processing & Text-as-Data

- Large Language Models (e.g., GPT-4, ChatGPT)

- Fine-tuning (e.g., LoRA, PEFT) and Small-LLMs (sLLMs)
- Contextualized Word Embeddings (e.g., BERT, RoBERTa, DeBERTa)
- Sentence Embeddings (e.g., Sentence-BERT models), Static Word Embeddings (e.g., word2vec)
- Text classification, text similarity assessment, Structural Topic Models (STMs) ... etc.

Programming Languages and Packages Frequently Used

- python: PyTorch, TensorFlow, HuggingFace, bitsandbytes, peft, sentence-transformers, transformers, openai, scikit-learn, gensim, numpy, pandas
- R: text, tidyverse, dplyr, ggplot2, psych, lme4, lmerTest, afex
- Other Languages: Java, C++, SQL

Honors & Awards

Outstanding Research Award , The Society for Personality and Social Psychology	2024
Graduate Student Conference Travel Award , The Center for the Study of Race, Ethnicity & Equity at Washington University in St.Louis (\$750)	2023
Winner and People's Choice of the Digital Transformation Track , McDonnell International Scholars Academy (\$3,000)	2023
Small Grant , The Center for the Study of Race, Ethnicity & Equity at Washington University in St.Louis (\$900)	2022
Diversity Graduate Travel/Registration Award , The Society for Personality and Social Psychology (\$500)	2022
Academic Achievement Medal , The Hong Kong University of Science and Technology	2020
Undergraduate Research Award Second Runner Up , The Hong Kong University of Science and Technology	2020
Scholarship for Continuing Undergraduate Students , The Hong Kong University of Science and Technology	2019
Scholarship for Continuing Undergraduate Students , Ng Hong Mun Educational Foundation	2018
Outstanding Student Scholarship , Ng Hong Mun Educational Foundation	2017

Research Experience

Stereotype Threat in Black College Students Across Many Operationalizations

2022-

- Coordinated data collection efforts for a large-scale study on stereotype threat among Black college students across the United States, aiming to recruit a large sample size (anticipated N = 2,700) from 30+ institutions to enhance the robustness of findings in stereotype threat research.
- Pre-print for the project: <https://osf.io/preprints/psyarxiv/6hju9>

Student Researcher (PI: Franziska Barbara Keller)

2019-2020

- Worked on a pivotal project examining coordinated activity patterns of Twitter accounts involved in political astroturfing during the 2012 South Korean Presidential Election.
- Conducted Social Network Analysis of Twitter account activities using Gephi, GraphViz, and R programming language identifying anomalous retweet patterns unique to astroturfing campaigns.
- Uncovered critical insights into the tactics of digital political influence, enhancing the understanding of social media's role in election dynamics.

Student Researcher (PI: Jiyeon Hong)

2018

- Led a research project analyzing sentiment of censored song lyrics during the Third and Fourth Republic of Korea, shedding light on the underlying socio-political sentiments of the time.
- Utilized state-of-the-art text-as-data approaches in Python and R to uncover distinctive sentiment patterns within censored lyrics and to draw correlations between the sentiments and the prevailing socio-political climate, contributing to a deeper understanding of historical censorship impacts.

Teaching Experience

Washington University in St.Louis, Assistant in Instruction

2023

- Text as Data (Instructor: Dr. Brandon Stewart)

Washington University in St.Louis, Assistant in Instruction

2022-2023

- Quantitative Methods I & II (Instructor: Dr. Shelly Cooper)

Professional Service and Activities

Reviewer

- Personality and Social Psychology Bulletin (March 2024)
- Socially Responsible Language Modelling Research (SoLaR) Workshop at NeurIPS 2023

University Service

- President of the Korean Graduate Student Association (KGSA) 2021-2022

Research Coverage & Recognition

Department of Political Science, Washington University in St.Louis ([Link](#)) 2024

Center for the Study of Race, Ethnicity & Equity ([Link](#)) 2024