

# Messi H.J. Lee

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## Research Interests

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**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

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### Washington University in St. Louis

Exp. 2025

- PhD Candidate in the Division of Computational and Data Sciences
- 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

## Full Conference & Journal Publications (Peer Reviewed)

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**Lee, M. H. J.**, Montgomery, J. M., & Lai, C. K. (June 2024). Large Language Models Portray Socially Subordinate Groups as More Homogeneous, Consistent with a Bias Observed in Humans. FAccT '24: Proceedings of the 2024 ACM Conference on Fairness, Accountability, and Transparency. [\[Pre-print Available on ArXiv\]](#) [\[Replication Materials\]](#)

**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> [\[Replication Materials\]](#) [\[OSF\]](#)

## Work in Progress

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**Lee, M. H. J.**, Montgomery, J. M., & Lai, C. K. (Submitted). More Distinctively Black and Feminine Faces Lead to Increased Stereotyping in Vision-Language Models. [\[Pre-print Available on ArXiv\]](#)[\[Replication Materials\]](#)

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

## Workshop Publications (Lightly Peer-Reviewed)

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**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](#)]

## Talks & Presentations

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**Lee, M. H. J.,** Montgomery, J. M., & Lai, C. K. (June 2024). *Large Language Models Portray Socially Subordinate Groups as More Homogeneous, Consistent with a Bias Observed in Humans*. ACM Conference on Fairness, Accountability, and Transparency 2024 in Rio de Janeiro, Brazil.

**Lee, M. H. J.,** Montgomery, J. M., & Lai, C. K. (May 2024). *Large Language Models Portray Socially Subordinate Groups as More Homogeneous, Consistent with a Bias Observed in Humans*. Poster Presentation @ STL DataFest 2024 in St. Louis, MO.

**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.

## Honors & Awards

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<b>Travel Grant</b> ACM Conference on Fairness, Accountability, and Transparency (\$1,000)	2024
<b>OpenAI API Researcher Access Program</b> OpenAI (\$5,000)	2024
<b>Outstanding Research Award</b> The Society for Personality and Social Psychology	2024
<b>Graduate Student Conference Travel Award</b> The Center for the Study of Race, Ethnicity & Equity at WashU (\$750)	2023
<b>Winner and People's Choice of the Digital Transformation Track</b> McDonnell International Scholars Academy (\$3,000)	2023
<b>Small Grant</b> The Center for the Study of Race, Ethnicity & Equity at WashU (\$900)	2022
<b>Diversity Graduate Travel/Registration Award</b> The Society for Personality and Social Psychology (\$500)	2022
<b>Academic Achievement Medal</b> The Hong Kong University of Science and Technology	2020
<b>Undergraduate Research Award Second Runner Up</b> The Hong Kong University of Science and Technology	2020
<b>Scholarship for Continuing Undergraduate Students</b> The Hong Kong University of Science and Technology	2019
<b>Scholarship for Continuing Undergraduate Students</b> Ng Hong Mun Educational Foundation	2018
<b>Outstanding Student Scholarship</b> Ng Hong Mun Educational Foundation	2017

## Teaching Experience

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<b>Washington University in St.Louis, Assistant in Instruction</b> <ul style="list-style-type: none"><li>Text as Data (Instructor: Dr. Brandon Stewart)</li></ul>	2023
<b>Washington University in St.Louis, Assistant in Instruction</b> <ul style="list-style-type: none"><li>Quantitative Methods I &amp; II (Instructor: Dr. Shelly Cooper)</li></ul>	2022-2023

## Skills

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### 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

## Research Experience

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### 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.

## Professional Service & Activities

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### Reviewer

- Trustworthy Multi-modal Foundation Models and AI Agents (TiFA) Workshop at ICML 2024
- Personality and Social Psychology Bulletin (March 2024)
- Socially Responsible Language Modelling Research (SoLaR) Workshop at NeurIPS 2023

### Program Committee

- Socially Responsible Language Modelling Research (SoLaR) 2.0 Workshop at NeurIPS 2024

### Conference Volunteer

- Volunteer at the STL DataFest 2024
- Volunteer at the Political Methodology (PolMeth) Annual Meeting 2022

### University Service

- President of the Korean Graduate Student Association (KGSA) 2021-2022
- McDonnell International Scholars Academy Information Session @HKUST 2023

## Research Coverage & Recognition

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Department of Political Science, Washington University in St.Louis ( <a href="#">Link</a> )	2024
Center for the Study of Race, Ethnicity & Equity ( <a href="#">Link</a> )	2024