

Chia-Hsuan (Michael) Lee

+1 669-204-2924 • chiahsuan.li@gmail.com
chiahsuanlee chia-hsuan-lee.github.io

Education

- University of Washington** Seattle, U.S.
○ PhD candidate, Electrical and Computer Engineering Department,
(Natural Language Processing Group) Advisor: Mari Ostendorf 2019 – Present
- National Taiwan University** Taipei, Taiwan
○ Master, Computer Science,
(Language Processing and Machine Learning Group) Advisors: Lin-shan Lee and Hung-Yi Lee 2017 – 2019
- National Taiwan University** Taipei, Taiwan
○ B.S., Electrical Engineering, 2012 – 2017

Research and Industry Experiences

- UW NLP Research Group** Seattle, U.S.
○ Advisor: Mari Ostendorf, Sep 2019 - Present
 - Proposed an **SLM/LLM dynamic routing framework driven by a retrieval-based router** that is finetuned to effectively leverage LM exemplars. The routing results outperform LLM systems and achieve 50% computational efficiency.
 - Created a new model for **LMs to perform structured predictions on task-oriented dialogues with schema-driven prompting** and achieved state-of-the-art results on a competitive dialogue state tracking task.
 - Proposed an **in-context learning framework for dialogue state tracking with an intent-aligned retriever** and achieved state-of-the-art few-shot results on a competitive dialogue state tracking task.
 - Built a **human-in-the-loop framework for generating long and natural conversations by leveraging instruction-following language model**. Showed effectiveness in improving state tracking on information-gathering dialogues.
- Google Brain Research** Seattle, U.S.
○ Advisors: Ankur Bapna, Yu Zhang, Tara Sainath, Jun-Dec 2022
Built a family of **multimodal speech-text long-context language models with quantized representation learning** and demonstrated improvements on long-form ASR and spoken question answering tasks.
- Google Machine Translation Research** Seattle, U.S.
○ Advisor: Melvin Johnson, Jun-Dec 2021
Proposed a new **pretraining objective for multilingual language models to comprehend and generate long documents**. Achieved state-of-the-art results in document translation tasks and analyzed effects of data quality and pretraining objectives for multilingual language models.
- Microsoft Research NLP Group** Seattle, U.S.
○ Advisor: Matthew Richardson, Alex Polozov, Jun-Sep 2020
Constructed a new cross-domain text-to-SQL dataset of real Web databases, along with realistic evaluation schemes. Demonstrated **incorporating database documentation benefits understanding structural in-domain knowledge** and improves parser performance.
- Siri Team, Apple Inc.** Cupertino, CA.
○ Advisor: Jerome Bellegarda, Jul-Sep 2019
Worked on pretraining of multilingual language models.

Publications

- [1] **In-Context Learning for Few-Shot Dialogue State Tracking**
Yushi Hu, **Chia-Hsuan Lee**, Tianbao Xie, Tao Yu, Noah A. Smith, Mari Ostendorf. *Conference on Empirical Methods in Natural Language Processing (EMNLP)*, 2022
- [2] **DOCmT5: Document-Level Pretraining of Multilingual Language Models**
Chia-Hsuan Lee, Aditya Siddhant, Viresh Ratnakar, Melvin Johnson. *Annual Conference of the North American Chapter of the Association for Computational Linguistics (NAACL)*, 2022
- [3] **MIA 2022 Shared Task: Evaluating Cross-lingual Open-Retrieval Question Answering for 16 Diverse Languages**
Akari Asai, Shayne Longpre, Jungo Kasai, **Chia-Hsuan Lee**, Rui Zhang, Junjie Hu, Ikuya Yamada, Jonathan H. Clark, and Eunsol Choi. *In Proceedings of the NAACL Workshop on Multilingual Information Access (MIA)*, 2022

- [4] **Dialogue State Tracking with a Language Model using Schema-Driven Prompting**
Chia-Hsuan Lee, Hao Cheng, Mari Ostendorf. *Conference on Empirical Methods in Natural Language Processing (EMNLP)*, 2021
- [5] **KaggleDBQA: Realistic Evaluation of Text-to-SQL Parsers**
Chia-Hsuan Lee, Oleksandr Polozov, Matthew Richardson. *Annual Conference of the Association for Computational Linguistics (ACL)*, 2021.
- [6] **Machine Comprehension of Spoken Content: TOEFL Listening Test and Spoken SQuAD**
Chia-Hsuan Lee, Hung-yi Lee, Szu-Lin Wu, Chi-Liang Liu, Wei Fang, Juei-Yang Hsu, Bo-Hsiang Tseng. *IEEE/ACM Transactions on Audio, Speech, and Language Processing (TASLP)* 2019
- [7] **Mitigating the Impact of Speech Recognition Errors on Spoken Question Answering by Adversarial Domain Adaptation**
Chia-Hsuan Lee, Yun-Nung Chen, Hung-Yi Lee. *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)* 2019
- [8] **ODSQA: Open-Domain Spoken Question Answering Dataset**
Chia-Hsuan Lee, Shang-Ming Wang, Huan-Cheng Chang, Hung-Yi Lee. *IEEE Spoken Language Technology Workshop (SLT)* 2018
- [9] **Spoken SQuAD: A Study of Mitigating the Impact of Speech Recognition Errors on Listening Comprehension**
Chia-Hsuan Lee, Szu-Lin Wu, Chi-Liang Liu, Hung-yi Lee. *Annual Conference of the International Speech Communication Association (Interspeech)* 2018

Preprints

- [1] **OrchestraLLM: Efficient Orchestration of Language Models for Dialogue State Tracking**
Chia-Hsuan Lee, Hao Cheng, Mari Ostendorf. *Preprint*, 2023.
- [2] **DIALGEN: Collaborative Human-LM Generated Dialogues for Improved Understanding of Human-Human Conversations**
Bo-Ru Lu*, Nikita Haduong*, Chia-Hsuan Lee, Zequi Wu, Hao Cheng, Paul Koester, Jean Utke, Tao Yu, Noah A. Smith, Mari Ostendorf. *Preprint*, 2023.
- [3] **Cross-Lingual Transfer Learning for Question Answering**
Chia-Hsuan Lee, Hung-Yi Lee. *Preprint*, 2019.

Professional Services

- Co-organizer, **Multilingual Information Access Workshop at NAACL 2022**
- **Program Committee (Reviewer)** EMNLP 2022-2023, ARR 2022-present, NAACL 2022, COLING 2022

Honors and Awards

- **Research scholarship, Ministry of Education of Taiwan** 2021-2023
- **Rushmer Fellowship, University of Washington** 2019
- **The Phi Tau Phi Scholastic Honor Society of Taiwan** (top 3% of EECS class) 2021

Teaching Experiences

- **Teaching Assistant** **Seattle, WA**
[CSE 473] *University of Washington, Introduction to Artificial Intelligence* Sep, 2023 – Dec, 2023
- **Teaching Assistant** **Seattle, WA**
[EE 596] *University of Washington, LLMs: From Transformers to GPT* Jan, 2024 – March, 2024
- **Head Teaching Assistant** **Taiwan**
[EE 5184] *National Taiwan University, Machine Learning* Sep, 2017 – Jan, 2018

Skills

- Software: Python, C/C++, Matlab, R, Tensorflow, PyTorch, Theano, Jax