I-HUNG HSU

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EDUCATION

University of Southern California, Los Angeles, California, USA   *Aug. 2018 - May. 2024 (Expected)*
Ph.D. in Computer Science
Advised by: Dr. Premkumar Natarajan & Dr. Nanyun Peng

National Taiwan University, Taipei, Taiwan   *Sep. 2013 - Jan. 2018*
B.S. in Electrical Engineering

RESEARCH INTERESTS

Information Extraction: Improving model generalization on relation and event extraction
Text Grounding: Knowledge grounding, evidence retrieval, and verification on grounded evidences
Multilingualism: (Zero-shot) Cross-lingual transfer

RESEARCH EXPERIENCE

Google Cloud AI Research, CA, USA   *Sep. 2023 - Present*
Research Intern, *Managers: Dr. Chen-Yu Lee & Dr. Chun-Liang Li*

- Proposed an unsupervised **verification** algorithm for **grounded generation** using **LLMs**.
- Studies **retrieval-augmented generation** behaviors of language models (LMs) from different LM series, including Yi, Vicuna, Llama, WizardLM, Tulu, etc.
- Paper submitted to ACL 2024.

University of Southern California, CA, USA   *Aug. 2018 - Present*
Graduate Student Researcher, *Advisors: Dr. Premkumar Natarajan & Dr. Nanyun Peng*

Selected Contributions:

- Recast event extraction as **language generation** tasks, enhancing the capture of event structures, leveraging dependencies among predictions, and enabling generalization in **zero/few-shot** and **cross-lingual** scenarios.
- Enhanced the generation-based event extraction model by incorporating cross-domain robust graphical features via **prefix learning**, thus improving generalization in low-resource settings.
- Developed a **multi-hop evidence retrieval** method to advance cross-document relation extraction.
- Introduced **unified frameworks** to facilitate cross-task learning and accelerate **indirect supervision** in weakly supervised information extraction.

University of California, Los Angeles, CA, USA   *Sep. 2020 - Present*
Visiting Student Researcher, *Advisor: Dr. Nanyun Peng*

Selected Contributions:

- Developed an advanced methodology that exploits **cross-lingual capabilities from large language models** (LLMs), resulting in improved performance for zero-shot cross-lingual structure prediction tasks.
- Proposed event-argument-aware techniques for **generating high-quality out-of-knowledge-base event linking query examples using LLMs**, improving model performance for event linking (the process of **grounding** event mentions with knowledge base entries).

Microsoft Research, WA, USA   *May. 2023 - Aug. 2023*
Research Intern, *Manager: Dr. Silviu Cucerzan; Mentor: Dr. Sujay Jauhar*

- Investigated the ability of LLMs to answer open-domain questions with **emerging factual knowledge**.

Alexa Conversations at Amazon Alexa AI, CA, USA   *May. 2022 - Aug. 2022*
Applied Scientist Intern*, Managers: Dr. Avik Ray & Dr. Jing Huang*

- Generalized **code-switched** text synthesis to multiple language pairs.
- Paper accepted to ACL-findings 2023.

Alexa Conversations at Amazon Alexa AI, CA, USA   *May. 2020 - Aug. 2020*
Applied Scientist Intern*, Manager: Dr. Abhay Jha*

- Leveraged negative learning mechanism to improve conversational agents.

National Taiwan University, Taipei, Taiwan   *Sep. 2016 - Dec. 2017*
Undergraduate Student Researcher*, Advisor: Dr. Hung-Yi Lee*

- Mitigated automatic speech recognition errors in dialogue systems.

PUBLICATIONS

[U.P.] **I-Hung Hsu***, Zihan Xue*, Nilay Pochhi, Sahil Bansal, Premkumar Natarajan, Jayanth Srinivasa, Nanyun Peng. Argument-Aware Approach To Event Linking. *ArXiv:2403.15097, 2024. Under review for ACL 2024.*

[U.P.] Kuan-Hao Huang, **I-Hung Hsu**, Tanmay Parekh, Zhiyu Xie, Zixuan Zhang, Premkumar Natarajan, Kai-Wei Chang, Nanyun Peng, Heng Ji. TextEE: Benchmark, Reevaluation, Reflections, and Future Challenges in Event Extraction. *ArXiv:2311.09562, 2023. Under review for ACL 2024.*

[15] Tanmay Parekh, **I-Hung Hsu**, Kuan-Hao Huang, Kai-Wei Chang, Nanyun Peng. Contextual Label Projection for Cross-Lingual Structure Extraction. In *Proceedings of the 2024 Annual Conference of the North American Chapter of the Association for Computational Linguistics (NAACL-HLT)*, 2024.

[14] **I-Hung Hsu***, Zhiyu Xie*, Kuan-Hao Huang, Premkumar Natarajan, Nanyun Peng. AMPERE: AMR-Aware Prefix for Generation-Based Event Argument Extraction Model. In *Proceedings of the 61st Annual Meeting of the Association for Computational Linguistics (ACL)*, 2023.

[13] **I-Hung Hsu***, Kuan-Hao Huang*, Shuning Zhang, Wenxin Cheng, Premkumar Natarajan, Kai-Wei Chang, Nanyun Peng. TAGPRIME: A Unified Framework for Relational Structure Extraction. In *Proceedings of the 61st Annual Meeting of the Association for Computational Linguistics (ACL)*, 2023. [*Oral.*]

[12] Kuan-Hao Huang, Varun Iyer, **I-Hung Hsu**, Anoop Kumar, Kai-Wei Chang, Aram Galstyan. ParaAMR: A Large-Scale Syntactically Diverse Paraphrase Dataset by AMR Back-Translation. In *Proceedings of the 61st Annual Meeting of the Association for Computational Linguistics (ACL)*, 2023. [Area Chair Awards.]

[11] Tanmay Parekh, **I-Hung Hsu**, Kuan-Hao Huang, Kai-Wei Chang, Nanyun Peng. GENEVA: Benchmarking Generalizability for Event Argument Extraction with Hundreds of Event Types and Argument Roles. In *Proceedings of the 61st Annual Meeting of the Association for Computational Linguistics (ACL)*, 2023.

[10] Keming Lu, **I-Hung Hsu**, Wenxuan Zhou, Minyu Derek Ma, Muhao Chen. Multi-hop Evidence Retrieval for Cross-document Relation Extraction. In *Findings of the Association for Computational Linguistics: ACL (ACL-findings)*, 2023.

[9] **I-Hung Hsu**, Avik Ray, Shubham Garg, Nanyun Peng, Jing Huang. Code-Switched Text Synthesis in Unseen Language Pairs. In *Findings of the Association for Computational Linguistics: ACL (ACL-findings)*, 2023.

[8] Keming Lu, **I-Hung Hsu**, Wenxuan Zhou, Minyu Derek Ma, Muhao Chen. Summarization as Indirect Supervision for Relation Extraction. In *Findings of the Association for Computational Linguistics: EMNLP (EMNLP-findings)*, 2022.

[7] **I-Hung Hsu***, Kuan-Hao Huang*, Elizabeth Boschee, Scott Miller, Premkumar Natarajan, Kai-Wei Chang, Nanyun Peng. DEGREE: A Data-Efficient Generation-Based Event Extraction Model. In *Proceedings of the 2022 Annual Conference of the North American Chapter of the Association for Computational Linguistics (NAACL-HLT)*, 2022. [*Oral.*]

[6] Kuan-Hao Huang*, **I-Hung Hsu***, Premkumar Natarajan, Kai-Wei Chang, Nanyun Peng. Multilingual Generative Language Models for Zero-Shot Cross-Lingual Event Argument Extraction. In *Proceedings of the 60th Annual Meeting of the Association for Computational Linguistics (ACL)*, 2022. [*Oral.*]

[5] **I-Hung Hsu**, Xiao Guo, Premkumar Natarajan, Nanyun Peng. Discourse-level Relation Extraction via Graph Pooling. In *The Thirty-Sixth AAAI Conference on Artificial Intelligence Workshop on Deep Learning on Graphs: Methods and Applications (DLG-AAAI'22)*, 2022. [*Best Paper Award.*]

[4] Rujun Han, **I-Hung Hsu**, Jiao Sun, Julia Baylon, Qiang Ning, Dan Roth, Nanyun Peng. ESTER: A Machine Reading Comprehension Dataset for Reasoning about Event Semantic Relations. In *Proceedings of the 2021 Conference on Empirical Methods in Natural Language Processing (EMNLP)*, 2021. [*Oral.*]

[3] Rujun Han*, **I-Hung Hsu***, Mu Yang, Aram Galstyan, Ralph Weischedel, Nanyun Peng. Deep Structured Neural Network for Event Temporal Relation Extraction. In *Proceedings of the 23rd Conference on Computational Natural Language Learning (CoNLL)*, 2019.

[2] **I-Hung Hsu**, Ayush Jaiswal, Premkumar Natarajan. NIESR: Nuisance Invariant End-to-end Speech Recognition. In *Proceedings of Interspeech (Interspeech)*, 2019.

[1] Pin-Jung Chen*, **I-Hung Hsu***, Yi-Yao Huang*, Hung-Yi Lee. Mitigating the Impact of Speech Recognition Errors on Chatbot using Sequence-to-sequence Model. In *Proceedings of IEEE Automatic Speech Recognition and Understanding (ASRU)*, 2017.

(*: Equal Contribution; P.: Preprint; U.: Under Submission*)

SELECTED AWARDS

Area Chair Award in ACL 2023 [Link]
– One out of papers in the track of Semantics: Sentence-level Semantics and Textual Inference. *2023*
Best Paper Award in DLG-AAAI'22 Workshop [Link] *2022*
Amazon Alexa Graduate Fellowship [Link] *2018 - 2019*

PROFESSIONAL SERVICES

Area Chair/Action Editor

• Natural Language Processing: ACL Rolling Review (2024)

Program Committee/Reviewer

• Natural Language Processing: COLM (2024), ACL Rolling Review (2021-2023), ACL (2021-2023), EMNLP (2021-2023), NAACL (2022-2024), EACL (2023-2024), NLPCC (2022-2023)
• Machine Learning: AAAI (2021-2024), AISTATS (2024)
• Miscs: CogSci (2023-2024), Transfer Learning for NLP workshop@NeurIPS (2022), RCQA@AAAI (2020)

TEACHING EXPERIENCE

Teaching Assistant, University of Southern California, CA, USA

• CSCI 567: Machine Learning   Fall 2022
• CSCI 544: Applied Natural Language Processing   Fall 2021

Teaching Assistant, National Taiwan University, Taipei, Taiwan

• Maching Learning   Fall 2017

SKILLS

Programming:	Python, PyTorch, Tensorflow, Keras, MySQL, Django, Docker, Git, LaTeX, C++, Matlab
Languages:	Mandarin (native), English (fluent), Taiwanese (fluent)