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Research Interests

Natural Language Processing, Computational Social Science, Information Solicitation

Education

University of Chicago

PhD student in Computer Science

2020 - present

Advisor: Chenhao Tan

University of Colorado Boulder (transferred)

PhD student in Computer Science, GPA : 3.93/4.0

2019 - 2020

Advisor: Chenhao Tan

National Taiwan University

BS in Computer Science and Information Engineering, GPA (Last 60) : 3.89/4.30

2013 - 2017

Research Experiences

Research Assistant. University of Colorado Boulder & University of Chicago

Advisor: **Chenhao Tan**

2019 - present

- **Characterizing the Value of Information in Medical Notes in MIMIC-III dataset (Publication [1])**
 - Discovered medical notes are valuable for readmission prediction, although not too useful for mortality prediction
 - Defined heuristics to select 6.8% of all words in notes that lead to more accurate predictions than using the whole notes in an admission
 - Found out retrained model with selected valuable sentences can outperform model trained with all medical notes

Applied Scientist Intern. Amazon - Alexa Search

Manager and Mentors: **Alessandro Moschitti, Luca Soldaini, Eric Lind**

2020 Summer

- **Generative Models for Question-Answering**
 - Developed training framework based on pre-trained Transformer models using PyTorchLightning package
 - Improved good answer rate by 10% and perfect answer rate by 6% on human evaluation

Research Assistant. Academia Sinica, Taiwan

Advisor: **Lun-Wei Ku**

2017 - 2019

- **Visual Storytelling**
 - Utilized knowledge graph to enrich visual storytelling by linking terms between two consecutive images . The proposed three-stage framework can be enhanced by external resources on each stage without images-to-story pairs. (Publication [2], Grants [a] & [b])
 - Constructed an interactive visual storytelling system. Users can modify the detected terms within the images to construct desired stories via a web application, (Publication [3], Grant [c])
 - Proposed an Inter-Sentence Diverse Beam Search method to reduce the redundancy sentence of similar images sequence and improve the Meteor score by 2.4% versus baseline model, (Publication [5], Grant [e])
- **Textual Emotion Recognition in Dialogues**
 - Exploited the turn-taking information in dialogue emotion recognition task and achieved 3% improvement on IEMOCAP dataset by modeling emotional states of different speakers
 - Organized a challenge in SocialNLP2018: *EmotionX Challenge: Recognizing Emotion in Dialogues*, (Publication [6])
 - Collected emotional dialogue dataset from Friends TV show transcript and EmotionPush real chat log and labeled data by Amazon Mechanical Turk, (Publication [7], Grant [d], [Dataset link](#),)

Publications

- [1] **Chao-Chun Hsu**, Shantanu Karnwal, Sendhil Mullainathan, Ziad Obermeyer, Chenhao Tan. “Characterizing the Value of Information in Medical Notes.” *Findings of EMNLP 2020* ([Paper link](#))
- [2] **Chao-Chun Hsu***, Zi-Yuan Chen*, Chi-Yang Hsu, Chih-Chia Li, Tzu-Yuan Lin, Ting-Hao Kenneth Huang and Lun-Wei Ku. “Knowledge-Enriched Visual Storytelling.” *AAAI 2020*. ([Paper link](#)) (*equal contribution)
- [3] **Chao-Chun Hsu***, Yu-Hua Chen*, Zi-Yuan Chen*, Hsin-Yu Lin, Ting-Hao Kenneth Huang and Lun-Wei Ku. “Dixit: Interactive Visual Storytelling via Term Manipulation.” *WWW Demo 2019*. (*equal contribution)
- [4] Kuan-Yen Lin, **Chao-Chun Hsu**, Yun-Nung Chen and Lun-Wei Ku. “Entropy-Enhanced Multimodal Attention Model for Scene-Aware Dialogue Generation.” *DSTC7 collocated with AAAI 2019*
- [5] **Chao-Chun Hsu**, Szu-Min Chen, Ming-Hsun Hsieh and Lun-Wei Ku. “Using Inter-Sentence Diverse Beam Search to Reduce Redundancy in Visual Storytelling.” *Storytelling workshop collocated with NAACL 2018* ([Paper link](#))
- [6] **Chao-Chun Hsu** and Lun-Wei Ku. “SocialNLP 2018 EmotionX Challenge Overview: Recognizing Emotions in Dialogues.” *SocialNLP collocated with ACL 2018* ([Paper link](#))
- [7] Sheng-Yeh Chen*, **Chao-Chun Hsu***, Chuan-Chun Kuo, Ting-Hao Huang and Lun-Wei Ku. “EmotionLines: An Emotion Corpus of Multi-Party Conversations.” *LREC 2018* ([Paper link](#)) (*equal contribution)

Grants & Awards

- [a] **2020 AAAI Scholarship (\$200)**, For attending AAAI Conference, Association for the Advancement of Artificial Intelligence
- [b] **2020 Travel Grant (\$300)**, For attending AAAI Conference, University of Colorado Boulder
- [c] **2019 Travel Grant (\$3000)**, For attending International World Wide Web Conference, Academia Sinica
- [d] **2018 Travel Grant (\$2000)**, For attending Language Resources and Evaluation Conference, Academia Sinica
- [e] **2017 Research Scholarship for Undergraduate Student (\$500)**, Ministry of Science and Technology Taiwan

Services

Reviewer: LREC 2020, AAAI 2021

Technical Skills

Languages: Python, L^AT_EX, Java

Packages & Platforms: PyTorch, NumPy, transformers, PyTorchLightning, AWS, git, TensorFlow, Django