

Shang-Yu Su

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RESEARCH INTERESTS

Dialogue Systems, Natural Language Processing with Deep Learning

EDUCATION

National Taiwan University (NTU) 2017/02 – 2021/10

Doctor of Philosophy in Computer Science;

Advisor: Yun-Nung (Vivian) Chen

Thesis: “Exploiting the Duality between Language Understanding and Generation and Beyond”

National Taiwan University (NTU) 2012/09 – 2017/01

Bachelor of Science in Electrical Engineering;

RESEARCH EXPERIENCES

Google 2020/10 – 2021/01

Research Intern, Google AI Research

Advisor: Abhinav Rastogi

- **Multilingual Dialogues**

Amazon 2020/07 – 2020/10

Applied Scientist Intern, Alexa AI

Advisor: Sungjin Lee

- **Natural Language Understanding**

Amazon 2019/04 – 2019/08

Applied Scientist Intern, Alexa AI

Advisors: Dilek Hakkani-Tur and Mihail Eric

- **Knowledge-Grounded Response Generation**

Microsoft 2018/03 – 2018/06

Research Intern

Advisors: Jianfeng Gao and Xiujun Li

- **Dialogue Policy Optimization**

NTU CSIE Machine Intelligence and Understanding Lab (MiuLab) 2016/09 – 2021/10

Undergraduate / Graduate Research Assistant

Advisor: Yun-Nung (Vivian) Chen

- **Duality between Language Understanding and Generation**
- **Language Understanding**
- **Dialogue Policy Optimization**
- **Language Generation**

PUBLICATIONS

- [1] **Shang-Yu Su***, Po-Wei Lin*, and Yun-Nung Chen. HUMBO: Bridging Response Generation and Facial Expression Synthesis. arXiv preprint, 2021.

- [2] **Shang-Yu Su***, Po-Wei Lin*, and Yun-Nung Chen. TREND: Trigger-Enhanced Relation-Extraction Network for Dialogues. arXiv preprint, 2021.
- [3] Yung-Sung Chuang, **Shang-Yu Su**, and Yun-Nung Chen, “Lifelong Language Knowledge Distillation,” in *Proceedings of the 2020 Conference on Empirical Methods in Natural Language Processing (EMNLP 2020)*, Virtual, November 16-20, 2020. ACL.
- [4] **Shang-Yu Su***, Yung-Sung Chuang*, and Yun-Nung Chen, “Dual Inference for Improving Language Understanding and Generation,” in *Findings of the 2020 Conference on Empirical Methods in Natural Language Processing (Finding of EMNLP 2020)*, Virtual, November 16-20, 2020. ACL.
- [5] **Shang-Yu Su**, Chao-Wei Huang, and Yun-Nung Chen, “Towards Unsupervised Language Understanding and Generation by Joint Dual Learning,” in *Proceedings of The 58th Annual Meeting of the Association for Computational Linguistics (ACL 2020)*, Virtual, July 5-July 10, 2020. ACL.
- [6] **Shang-Yu Su**, Chao-Wei Huang, and Yun-Nung Chen, “Dual Supervised Learning for Natural Language Understanding and Generation,” in *Proceedings of The 57th Annual Meeting of the Association for Computational Linguistics (ACL 2019)*, Florence, Italy, July 28-Aug 2, 2019. ACL.
- [7] Yu-An Wang*, Yu-Kai Huang*, Tzu-Chuan Lin*, **Shang-Yu Su**, and Yun-Nung Chen, “Modeling Melodic Feature Dependency with Modularized Variational Auto-Encoder,” in *Proceedings of The 44th IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP 2019)*, Brighton, U.K., May 12-17, 2019. IEEE.
- [8] **Shang-Yu Su**, Shan-Wei Lin, and Yun-Nung Chen, “Compound Variational Auto-Encoder,” in *Proceedings of The 44th IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP 2019)*, Brighton, U.K., May 12-17, 2019. IEEE.
- [9] **Shang-Yu Su**, Pei-Chieh Yuan, and Yun-Nung Chen, “Dynamically Context-Sensitive Time-Decay Attention for Dialogue Modeling,” in *Proceedings of The 44th IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP 2019)*, Brighton, U.K., May 12-17, 2019. IEEE.
- [10] Yi-Ting Yeh, Tzu-Chuan Lin, Hsiao-Hua Cheng, Yi-Hsuan Deng, **Shang-Yu Su**, and Yun-Nung Chen, “Reactive Multi-Stage Feature Fusion for Multimodal Dialogue Modeling,” in *The 7th Dialog System Technology Challenge (DSTC7) in Proceedings of Thirty-Third AAAI Conference on Artificial Intelligence (AAAI 2019)*, Honolulu, Hawaii, USA, 2019.
- [11] Hao-Tong Ye, Kai-Ling Lo, **Shang-Yu Su**, and Yun-Nung Chen, “Knowledge-Grounded Response Generation with Deep Attentional Latent-Variable Model,” in *The 7th Dialog System Technology Challenge (DSTC7) in Proceedings of Thirty-Third AAAI Conference on Artificial Intelligence (AAAI 2019)*, Honolulu, Hawaii, USA, 2019.
NOTE: Also published in *Computer Speech and Language* (Journal, 2020)
- [12] Ting-Rui Chiang, Chao-Wei Huang, **Shang-Yu Su**, and Yun-Nung Chen, “Learning Multi-Level Information for Dialogue Response Selection by Highway Recurrent Transformer,” in *The 7th Dialog System Technology Challenge (DSTC7) in Proceedings of Thirty-Third AAAI Conference on Artificial Intelligence (AAAI 2019)*, Honolulu, Hawaii, USA, 2019.
NOTE: Also published in *Computer Speech and Language* (Journal, 2020)
- [13] Chao-Wei Huang, Ting-Rui Chiang, **Shang-Yu Su**, and Yun-Nung Chen, “RAP-Net: Recurrent Attention Pooling Networks for Dialogue Response Selection,” in *The 7th Dialog System Technology Challenge (DSTC7) in Proceedings of Thirty-Third AAAI Conference on Artificial Intelligence (AAAI 2019)*, Honolulu, Hawaii, USA, 2019.
NOTE: Also published in *Computer Speech and Language* (Journal, 2020)

- [14] **Shang-Yu Su** and Yun-Nung Chen, “Investigating Linguistic Pattern Ordering in Hierarchical Natural Language Generation,” in *Proceedings of 7th IEEE Workshop on Spoken Language Technology (SLT 2018)*, Athens, Greece, December 18-21, 2018. IEEE.
- [15] **Shang-Yu Su**, Xiujun Li, Jianfeng Gao, Jingjing Liu, and Yun-Nung Chen, “Discriminative Deep Dyna-Q: Robust Planning for Dialogue Policy Learning,” in *Proceedings of the 2018 Conference on Empirical Methods in Natural Language Processing (EMNLP 2018)*, Brussels, Belgium, October 31-November 4, 2018. ACL
- [16] Baolin Peng, Xiujun Li, Jianfeng Gao, Jingjing Liu, Kam-Fai Wong, and **Shang-Yu Su**, “Deep Dyna-Q: Integrating Planning for Task-Completion Dialogue Policy Learning,” in *Proceedings of The 56th Annual Meeting of the Association for Computational Linguistics (ACL 2018)*, Melbourne, Australia, July 15-20, 2018
- [17] **Shang-Yu Su**, Kai-Ling Lo, Yi-Ting Yeh, and Yun-Nung Chen, “Natural Language Generation by Hierarchical Decoding with Linguistic Patterns,” in *Proceedings of The 16th Annual Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies (NAACL-HLT 2018)*, New Orleans, USA, June 1-6, 2018
- [18] **Shang-Yu Su**, Pei-Chieh Yuan, and Yun-Nung Chen, “How Time Matters: Learning Time-Decay Attention for Contextual Spoken Language Understanding in Dialogues,” in *Proceedings of The 16th Annual Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies (NAACL-HLT 2018)*, New Orleans, USA, June 1-6, 2018
- [19] **Shang-Yu Su**^{*}, Po-Chun Chen^{*}, Ta-Chung Chi^{*}, and Yun-Nung Chen, “Dynamic Time-Aware Attention to Speaker Roles and Contexts for Spoken Language Understanding,” in *Proceedings of 2017 IEEE Workshop on Automatic Speech Recognition and Understanding (ASRU 2017)*, Okinawa, Japan, December 16-20, 2017 (**co-first author**)
- [20] **Shang-Yu Su**^{*}, Ta-Chung Chi^{*}, Po-Chun Chen^{*}, and Yun-Nung Chen, “Speaker Role Contextual Modeling for Language Understanding and Dialogue Policy Learning,” in *Proceedings of The 8th International Joint Conference on Natural Language Processing (IJCNLP 2017)*, Taipei, Taiwan, November 27-December 1, 2017. (**co-first author**)

SELECTED HONOR & AWARDS

Google PhD Fellowship (2020)

Google

- 1 of the 4 recipients of Natural Language Processing area worldwide.

Appier Scholarship

Appier Inc.

- Travel grant for EMNLP 2018.
- Travel grant for ACL 2019.

Verizon Media Scholarship Program

Verizon Media Inc.

- Travel grant for ACL 2019.

Viscovery Selected Prize

NTU CSIE Undergraduate Research Contest

- The project “Intrinsically Motivated Dialogue Management by Hierarchical Reinforcement Learning” received the selected prize by Viscovery Inc..

PROFESSIONAL ACTIVITIES

All served as *Program Committee (Dialogue and Interactive Systems)* or *Reviewer*:

ACL (2019, 2020)

EMNLP (2019, 2020, 2021)

IJCNLP (2019, 2020)

AAACL (2020)

NAACL (2021)

EACL (2021)

COLING (2020)

AAAI (2021, 2022)

ACL Student Research Workshop (2018)

ACL Demo Track (2021)

NeurIPS (2021)

ICLR (2022)

Dialog System Technology Challenges (DSTC) (2019, 2020, 2021)

NLP4ConvAI Workshop (2019, 2020, 2021)

Human in the Loop Dialogue Systems Workshop (2020)

ACM ICMI-CATSLU (2019)

IEEE DataCom (2019)

ICASSP (2021)

Computer Speech & Language

IEEE Signal Processing Letter

IEEE Access

Transactions on Audio, Speech and Language Processing

Neurocomputing

WORKING EXPERIENCES

National Taiwan University

2017/02 –

Teaching Assistant

- [CSIE5431] Applied Deep Learning (2017 Fall, 2019 Spring, 2020 Spring)
- [CSIE5400] Artificial Intelligence (2018 Fall)
- [EE5184] Machine Learning (2017 Fall)
- [CSIE5440] Intelligent Conversational Bot (2017 Spring)
- [CommE5045] Machine Learning and Having It Deep and Structured (2017 Spring & 2016 Fall)

Yahoo!

2016/09 – 2017/03

Software Engineering Intern, ABU Media Engineering Group

- Rebuilt Yahoo! News Taiwan website with new technologies, which consumes over 2.2 million daily users (No.1 in Taiwan)
- Developed Web front-end interfaces with responsive webpage design and high performance
- Engaged in Agile software development with Scrum
- Collaborated with full-time engineers, designers, and a project manager

Yahoo!

2016/07 – 2016/08

Software Engineering intern, ABU E-Commerce C2C Engineering Group

- Built an iOS app to enable video live streaming and real-time text chatting in less than 1.5 months, which includes the app design and implementation, a back-end server, a database storage, and the integration of OAuth2 API and live-streaming function
- Engaged in Agile software development with Scrum
- Collaborated with an engineering intern and a designer intern

Microsoft

2015/07 – 2016/06

Research & Development Intern, OAS Taipei Team

- Completed several data visualization features and integrated them into a company internal system, the works cover front-end development and backend-database integration
- Converted the web front-end UI into responsive web design (RWD) and functioned gracefully in all the modern browsers
- Refined the UI of Power Point online

REFERENCES

- Dr. Yun-Nung (Vivian) Chen
Associate Professor of National Taiwan University, yvchen@csie.ntu.edu.tw
- Dr. Jianfeng Gao
Partner Research Manager of Microsoft, jfgao@microsoft.com
- Abhinav Rastogi
Software Engineer of Google, abhirast@google.com
- Dr. Sungjin Lee
Principal Applied Scientist of Amazon, sungjinl@amazon.com
- Dr. Dilek Hakkani-Tur
Senior Principal Applied Scientist of Amazon, hakkanit@amazon.com