

# Shang-Yu Su

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## RESEARCH INTERESTS

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Natural Language Processing with Deep Learning, Dialogue Systems, Search/Recommendation Systems

## EDUCATION

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**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

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**Rakuten** 2023/2 –

*Research Scientist, Rakuten Institute of Technology*

- **Search/Recommendation Systems**

**Google** 2020/10 – 2021/01

*Research Intern, Google AI Research*

Advisor: Abhinav Rastogi

- **Unsupervised Multilingual Response Generation**

**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**
- **Other Dialogues Problems**

## WORKING EXPERIENCES

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## Yahoo!

2016/07 – 2017/03

### Software Engineering Intern

- Rebuilt Yahoo! News Taiwan website with new technologies, which consumes over 2.2 million daily users (No.1 in Taiwan)
- Built an iOS app to enable video live streaming and real-time text chatting in less than 1.5 months
- Engaged in Scrum software development

## Microsoft

2015/07 – 2016/06

### Software Engineering Intern

- Completed several data visualization features and integrated them into a company internal system, the works cover front-end development and backend-database integration
- Implemented Power Point online web front-end features

## PUBLICATIONS

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(Listed preprint, conference, and journal publications. **co-first author\***)

- [1] **Shang-Yu Su\***, Po-Wei Lin\*, and Yun-Nung Chen, “TREND: Trigger-Enhanced Relation-Extraction Network for Dialogues,” in *Proceedings of The 23rd Annual Meeting of the Special Interest Group on Discourse and Dialogue (SIGDIAL 2022)*, Edinburgh, UK, September 7-9, 2022. ACL/ISCA.
- [2] Ting-Chun Wang, **Shang-Yu Su**, and Yun-Nung Chen, “BARCOR: Towards A Unified Framework for Conversational Recommendation Systems,” *arXiv preprint*, 2022.
- [3] **Shang-Yu Su\***, Po-Wei Lin\*, and Yun-Nung Chen, “HUMBO: Bridging Response Generation and Facial Expression Synthesis,” *arXiv preprint*, 2021.
- [4] 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.
- [5] **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.
- [6] **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.
- [7] **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.
- [8] 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.
- [9] **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.
- [10] **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.

- [11] 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.
- [12] 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)
- [13] 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)
- [14] 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)
- [15] **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.
- [16] **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
- [17] 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
- [18] **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
- [19] **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
- [20] **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.
- [21] **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.

## **SELECTED HONOR & AWARDS**

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### **PhD Thesis Award (2022)**

*TAAI*

- Honorable Mention

### **Best Thesis Award (2022)**

*ACLCLP*

- The best NLP thesis nationwide.

### **Google PhD Fellowship (2020)**

*Google*

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

### **Foxconn Technology Award (2021)**

*Foxconn*

### **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.

## **PROFESSIONAL ACTIVITIES**

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

### **Conferences and Workshops:**

*ACL, EMNLP, IJCNLP, AACL, NAACL, EACL, COLING, AAAI, ACL Student Research Workshop, ACL Demo Track, NeurIPS, ICLR, Dialog System Technology Challenges (DSTC), NLP4ConvAI Workshop, Human in the Loop Dialogue Systems Workshop, ACM ICMI-CATSLU, IEEE DataCom, ICASSP*

### **Journals:**

*Computer Speech & Language, IEEE Signal Processing Letter, IEEE Access, Transactions on Audio, Speech and Language Processing (TASLP), Neurocomputing*

## **LANGUAGES**

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- Chinese (native)
- English (fluent): **TOEIC-Gold (>900)** with experiences of working in the USA
- Japanese (mid-level): **JLPT-N2**
- Korean (mid-level): **TOPIK-Level 3**

## **REFERENCES**

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- Dr. Yun-Nung (Vivian) Chen  
Associate Professor of National Taiwan University, [yvchen@csie.ntu.edu.tw](mailto:yvchen@csie.ntu.edu.tw)

- Dr. Jianfeng Gao  
Distinguished Scientist & Vice President at Microsoft Research, [jfgao@microsoft.com](mailto:jfgao@microsoft.com)
- Abhinav Rastogi  
Senior Software Engineer of Google, [abhirast@google.com](mailto:abhirast@google.com)
- Dr. Sungjin Lee  
Principal Applied Scientist of Amazon, [sungjinl@amazon.com](mailto:sungjinl@amazon.com)
- Dr. Dilek Hakkani-Tur  
Senior Principal Applied Scientist of Amazon, [hakkanit@amazon.com](mailto:hakkanit@amazon.com)