YI-LIN (PASCAL) TUAN

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EDUCATION

PhD, Computer Science, University of California Santa Barbara *2019 - 2024 (expected)*
Advisor: William Yang Wang

BS, Electrical Engineering, National Taiwan University *2013 - 2017*
Advisors: Lin-shan Lee, Hung-yi Lee, Yun-Nung Chen

SELECTED RESEARCH

* indicates equal contribution. Full list of papers can be found at My Google Scholar

1. **Yi-Lin Tuan**, Zih-Yun Chiu, William Yang Wang. "Dynamic Latent Separation for Deep Learning" Under submission. 2024.

2. Zih-Yun Chiu*, **Yi-Lin Tuan***, William Yang Wang, Michael Yip. "Flexible Attention-Based Multi-Policy Fusion for Efficient Deep Reinforcement Learning" In: NeurIPS, 2023.

3. **Yi-Lin Tuan**, Alon Albalak, Wenda Xu, Michael Saxon, Connor Pryor, Lise Getoor, William Yang Wang. "CausalDialogue: Modeling Utterance-level Causality in Conversations" In: ACL (Findings), 2023.

4. **Yi-Lin Tuan**, Sajjad Beygi, Maryam Fazel-Zarandi, Qiaozi Gao, Alessandra Cervone, and William Yang Wang. "Towards Large-Scale Interpretable Knowledge Graph Reasoning for Dialogue Systems". In: ACL (Findings), 2022.

5. **Yi-Lin Tuan**, Connor Pryor, Wenhu Chen, Lise Getoor, and William Yang Wang. "Local Explanation of Dialogue Response Generation". In: NeurIPS, 2021.

6. **Yi-Lin Tuan**, Ahmed El-Kishky, Adi Renduchintala, Vishrav Chaudhary, Francisco Guzman, and Lucia Specia. "Quality Estimation without Human-labeled Data". In: EACL, 2021.

7. **Yi-Lin Tuan**, Wei Wei, and William Yang Wang. "Knowledge Injection into Dialogue Generation via Language Models". Preprint, 2020.

8. **Yi-Lin Tuan**, Yun-Nung Chen, and Hung-yi Lee. "DyKgChat: Benchmarking Dialogue Generation Grounding on Dynamic Knowledge Graphs". In: EMNLP, 2019. **Best Paper Award at SoCalNLP19**

9. Feng-Guang Su*, Aliyah R Hsu*, **Yi-Lin Tuan**, and Hung-Yi Lee. "Personalized Dialogue Response Generation Learned from Monologues". In: Interspeech, 2019

10. **Yi-Lin Tuan** and Hung-Yi Lee. "Improving conditional sequence generative adversarial networks by step-wise evaluation". In: IEEE/ACM Transactions on Audio, Speech, and Language Processing 27.4 (2019), pp. 788–798, 2018.

11. **Yi-Lin Tuan***, Jinzhi Zhang*, Yujia Li, and Hung-yi Lee. "Proximal Policy Optimization and its Dynamic Version for Sequence Generation". Preprint, 2018.

12. Che-Ping Tsai*, **Yi-Lin Tuan***, and Lin-shan Lee. "Transcribing lyrics from commercial song audio: the first step towards singing content processing". In: ICASSP, 2018.

WORK EXPERIENCE

University of California Santa Barbara *Santa Barbara, CA, USA*
Graduate Student Researcher *Sep2019 - Present*
Advisor: William Yang Wang
- Proposed **human preference** based training loss and achieved higher **language model agility**.
- Proposed **post-hoc, model agnostic explanation** method for generative language models.
- Proposed loss function enhancement for improving **model expressiveness** via dynamic latent separation.
- Pioneered general **reinforcement learning** to leverage external/prior knowledge.

Meta *New York, NY, USA*
Research Intern, GenAI team *Jun2023 - Nov2023*
Host: Dan Bikel; Group: Xilun Chen, Eric Smith, Louis Martin, Asli Celikyilmaz

- Built **causality**-enhanced, multi-attribute multi direction **RLHF**, **GAN** models with human feedback.
- Achieved **helpfulness and safety controllable LLMs**.

Meta *Menlo Park, CA, USA*
Research Intern, AI4AR team *Jun2022 - Sep2022*
Host: Wenhan Xiong; Group: Chunting Zhou, Chunyang Wu, Anchit Gupta
- Performed **large-scale pretraining** for long context on structured state-space sequence model.
- Achieved quadratic faster inference time and comparable performance of transformers.

Amazon *Boston, MA, USA*
Applied Scientist Intern, Amazon Alexa AI team *Jun2021 - Sep2021*
Host: Sajjad Beygi; Group: Maryam Fazel-Zarandi, Qiaozi Gao, Alessandra Cervone
- Proposed a differentiable **knowledge graph** grounded transformer for **interpretable** dialogue system.
- Achieved reasoning over 10,000 times larger scale knowledge graphs compared to prior study.

Facebook *Menlo Park, CA, USA*
Research Intern, language team *Jun2020 - Sep2020*
Host: Ahmed El-Kishky; Group: Adi Renduchintala, Vishrav Chaudhary, Paco Guzmán, Lucia Specia
- Proposed the first **data synthesis** approach for machine translation quality estimation.
- Achieved comparable performance with models trained on expert labeled data.

National Taiwan University *Taipei, Taiwan*
Research Assistant *Oct2017 - Jul2019*
Advisors: Hung-yi Lee, Yun-Nung Chen, Lin-shan Lee
- Proposed **proximal policy optimization for language modeling** and achieved higher **stability**.
- Improved sequence GAN with **reinforcement learning** in terms of performance and computations.
- Pioneered **dynamic knowledge graph** grounded dialogue generation and achieved no need of retraining.
- Pioneered and built benchmark of lyrics recognition in singing via ASR system.

PROFESSIONAL SERVICES

Program Committee (Reviewer) for machine learning: ICLR 2022-2023, NeurIPS 2023, AAAI 2021

Program Committee (Reviewer) for natural language processing: EMNLP 2022-2023, ACL 2023

TALKS

Invited talk at Google AI, *Local Explanation of Dialogue Response Generation* 2021

Invited talk (on behalf) at EMNLP FEVER, *Fact Verification with Semi-Structured Knowledge* 2019

Contributed talk at SoCalNLP'19, *Dynamic Knowledge-Grounded Dialogue Generation through Walking on the Graph* 2019

Invited talk at ASUS, *Dialogue Response Generation Grounded on Dynamic Knowledge Graphs* 2019

TEACHING EXPERIENCE

Teaching Assistant at UCSB *CS190I: Natural Language Processing* *Winter 2022*

Teaching Assistant at NTU *CommE 5045: Machine Learning and Having it Deep and Structured* *Spring 2017*

AWARDS

Best Poster Award at ACM Augmented Humans 2022

Best Paper Award at South California NLP Symposium (SoCalNLP) 2019

Academic Excellence Fellowship at University of California Santa Barbara 2019

Electrical Engineering 1960 Alumni Scholarship at National Taiwan University 2016

Electrical Engineering 1960 Alumni Scholarship at National Taiwan University 2014

Presidential Award, rank 1/169, at National Taiwan University Electrical Engineering 2014