Wenda Xu

wendaxu@ucsb.edu

Education

University of California, Santa Barbara — Santa Barbara, CA
Ph.D., Computer Science: **3.9/4.0** — 9/2020–*6/2025*
Advisor: William Yang Wang, Ph.D
Lei Li, Ph.D

University of California, Davis — Davis, CA
BS., Computer Science: **3.9/4.0** — 9/2016–3/2020
Senior Design Project—Visual SLAM using ORB-SLAM2 with Path Finding
Advisors: Chen-Nee Chuah, Ph.D.

Research Interests

My major research interests lie in the area of text generation evaluation and large language model (LLM) alignment (at pre-training, post-training and inference stages). In one sentence, I want to learn metrics that can assess LLM's generation quality and align LLM with well defined feedback.

I am the first author of SEScore1&2 and InstructScore (Best Unsupervised Text Generation metrics at WMT22 shared task). Currently, I am actively working on LLM post-training techniques, in both preference learning and knowledge distillation.

First Author's Publications & Preprints

1. **Wenda Xu**, Rujun Han, Zifeng Wang, Long Le, Dhruv Madeka, Lei Li, William Yang Wang, Rishabh Agarwal, Chen-Yu Lee, Tomas Pfister, "Speculative Knowledge Distillation: Bridging the Teacher-Student Gap Through Interleaved Sampling", https://openreview.net/pdf?id=EgJhwYR2tB, on submission, **a generic KD framework that generalizes to On-policy and supervised KD**, achieves substantial gains in task specific and task agnostic knowledge distillation

2. **Wenda Xu***, Jiachen Li*, William Yang Wang, Lei Li**, "**BPO: Supercharging Online Preference Learning by Adhering to the Proximity of Behavior LLM", https://arxiv.org/abs/2406.12168, EMNLP 2024, *equal contribution **(TL;DR (72.0%->89.5%), Helpfulness (82.2%->93.5%), Harmfulness (77.5%->97.7%))**

3. **Wenda Xu,** Guanglei Zhu, Xuandong Zhao, Liangming Pan, Lei Li, William Yang Wang, "Pride and Prejudice: LLM Amplifies Self-Bias in Self-Refinement", https://arxiv.org/abs/2402.11436, *ACL 2024 Oral* **(First define and quantify LLM's self-bias towards its own outputs)**

4. **Wenda Xu**, Daniel Deutsch, Mara Finkelstein, Juraj Juraska, Biao Zhang, Zhongtao Liu, William Yang Wang, Lei Li, Markus Freitag, "LLMRefine: Pinpointing and Refining Large Language Models via Fine-Grained Actionable Feedback", https://arxiv.org/abs/2311.09336, *NAACL 2024* **(Fine-grained LLM agent iteratively improves PALM2 for 1.7 MetricX on translation tasks, 8.1 ROUGE-L on ASQA, 2.2 ROUGE-L on topical summarization)**

5. **Wenda Xu**, Danqing Wang, Liangming Pan, Zhenqiao Song, Markus Freitag, William Yang Wang, Lei Li, "INSTRUCTSCORE: Explainable Text Generation Evaluation with Finegrained Feedback", https://arxiv.org/abs/2305.14282, *EMNLP 2023 Oral* **(Fine-grained 7B LLM evaluator surpasses all other unsupervised metrics, including those based on 175B GPT-3 and GPT-4)**

6. **Wenda Xu**, Xian Qian, Mingxuan Wang, Lei Li, William Yang Wang, "SEScore2: Learning Text Generation Evaluation via Synthesizing Realistic Mistakes", https://arxiv.org/abs/2212.09305, *ACL2023* **(The overall Kendall correlation improves 14.3% from SEScore)**

7. **Wenda Xu**, Yilin Tuan, Yujie Lu, Michael Saxon, Lei Li, William Yang Wang, "Not All Errors are Equal: Learning Text Generation Metrics using Stratified Error Synthesis", https://arxiv.org/abs/2210.05035, *EMNLP 2022*, **SEScore: No.1 metric among all unsupervised metrics in WMT22 metrics shared task**

8. **Wenda Xu**, Michael Saxon, Misha Sra and William Yang Wang**, "**Self-Supervised Knowledge Assimilation for Expert-Layman Text Style Transfer", https://arxiv.org/abs/2110.02950, **relative improving overall success rate by 106%**, *AAAI 2022*

Collaboration Publications

9. Xi Xu, **Wenda Xu**, Siqi Ouyang, Lei Li, "CA*: Addressing Evaluation Pitfalls in Computation-Aware Latency for Simultaneous Speech Translation", https://arxiv.org/abs/2410.16011, on submission

10. Juhyun Oh, Eunsu Kim, Jiseon Kim, **Wenda Xu**, Inha Cha, William Yang Wang, Alice Oh, "Uncovering Factor Level Preferences to Improve Human-Model Alignment", https://arxiv.org/pdf/2410.06965, on submission

11. Chinmay Dandekar, **Wenda Xu**, Xi Xu, Siqi Ouyang, Lei Li, "Translation Canvas: An Explainable Interface to Pinpoint and Analyze Translation Systems", https://arxiv.org/abs/2410.10861, EMNLP Demo 2024

12. Liangming Pan, Michael Saxon, **Wenda Xu**, Deepak Nathani, Xinyi Wang, William Yang Wang, "Automatically Correcting Large Language Models: Surveying the landscape of diverse self-correction strategies", https://arxiv.org/pdf/2308.03188.pdf, TACL 2024

13. Michael Saxon, Xinyi Wang, **Wenda Xu**, William Yang Wang, "PECO: Examining Single Sentence Label Leakage in Natural Language Inference Datasets through Progressive Evaluation of Cluster Outliers", https://arxiv.org/abs/2112.09237, EACL2023

14. Yujie Lu, Weixi Feng, Wanrong Zhu, **Wenda Xu**, Xin Eric Wang, Miguel Eckstein, William Yang Wang, "Neuro-Symbolic Causal Language Planning with Commonsense Prompting", https://arxiv.org/abs/2206.02928, ICLR2023

15. Wanrong Zhu, An Yan, Yujie Lu, **Wenda Xu**, Xin Eric Wang, Miguel Eckstein, William Yang Wang, "Visualize Before You Write: Imagination-Guided Open-Ended Text Generation", https://arxiv.org/pdf/2210.03765.pdf, EACL2023

16. Yi-Lin Tuan, Alon Albalak, **Wenda Xu**, Michael Saxon, Connor Pryor, Lise Getoor, William Yang Wang, "CausalDialogue: Modeling Utterance-level Causality in Conversations ", https://arxiv.org/pdf/2212.10515.pdf, ACL2023

Industry Research Experience

Google Cloud Research — Los Angles, CA

Research Science Intern — *6/2024 - 10/2024*

Mentors: Rujun Han, Zifeng Wang, Rishabh Agarwal, Chen-Yu Lee.

Publication: *Speculative Knowledge Distillation: Bridging the Teacher-Student Gap Through Interleaved Sampling*

Google Translate Research — Mountain View, CA

Research Science Intern — *6/2023 - 12/2023*

Mentors: Dan Deutsch, Markus Freitag.

Publication: *LLMRefine: Pinpointing and Refining Large Language Models via Fine-Grained Actionable Feedback*

TikTok AI Lab — Mountain View, CA

Research Science Intern — *6/2022 - 10/2022*

Mentors: Xian Qian, Mingxuan Wang.

Publication: SESCORE2: Learning Text Generation Evaluation via Synthesizing Realistic Mistakes

Honors

UCSB, **The Robert Noyce Fellowship, Academic Excellence Fellowship** — 2022

UC Davis, **Honor Graduation** — 2020

UC Davis, **Thomas E. Bruzzone** — 2019

UC Davis, **Robert Murdoch Memorial Scholarship** — 2019

UC Davis, **Best Senior Design of a year (Visual SLAM)** — 2019

UC Davis, College of Engineering, **Dean's Honor list** — 16-20