

Xin (Eric) Wang

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RESEARCH INTERESTS

At the intersection of natural language processing, computer vision, and machine learning, my research aims at bridging language, vision and knowledge, and developing intelligent agents that interact in the multimodal world via natural language along the following dimensions:

- Problems: Language and Vision, Natural Language Grounding (e.g. Navigation), Natural Language Generation, Cross-modal Reasoning, Human Activity Understanding
- Methodology: Deep Learning, Reinforcement Learning, Adversarial Learning, Self-supervised Learning, Meta Learning, Transfer Learning

EDUCATION

University of California, Santa Barbara 2015 - Present
Ph.D. in Computer Science
Advisors: William Yang Wang and Yuan-Fang Wang
Additional thesis committee members: Matthew Turk, Xifeng Yan

Zhejiang University, China 2011 - 2015
Bachelor of Engineering in Computer Science and Technology
Thesis Advisor: Gang Pan

PUBLICATIONS Conference Papers

- [16] **Xin Wang***, Jiawei Wu*, Junkun Chen, Lei Li, Yuan-Fang Wang, William Yang Wang. "VATEX: A Large-Scale, High-Quality Multilingual Dataset for Video-and-Language Research". *International Conference on Computer Vision (ICCV)*, 2019. **Oral Presentation (received three Strong Accepts)**
- [15] Ming Jiang, Qiuyuan Huang, Lei Zhang, **Xin Wang**, Pengchuan Zhang, Zhe Gan, Jana Diesner, Jianfeng Gao. "TIGER: Text-to-Image Grounding for Image Caption Evaluation". *2019 Conference on Empirical Methods in Natural Language Processing and 9th International Joint Conference on Natural Language Processing (EMNLP-IJCNLP)*, 2019.
- [14] **Xin Wang**, Qiuyuan Huang, Asli Celikyilmaz, Jianfeng Gao, Dinghan Shen, Yuan-Fang Wang, William Yang Wang, Lei Zhang. "Reinforced Cross-Modal Matching and Self-Supervised Imitation Learning for Vision-Language Navigation". *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2019. **Best Student Paper Award (1/5160 \approx 0.02%)**
- [13] Da Zhang, Xiyang Dai, **Xin Wang**, Yuan-Fang Wang, Larry Davis. "MAN: Moment Alignment Network for Natural Language Moment Retrieval via Iterative Graph Adjustment". *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2019.
- [12] Jiawei Wu, **Xin Wang**, William Yang Wang. "Self-Supervised Dialogue Learning". *57th Annual Meeting of the Association for Computational Linguistics (ACL)*, 2019.
- [11] Hong Wang, **Xin Wang**, Wenhan Xiong, Mo Yu, Xiaoxiao Guo, Shiyu Chang, William Yang Wang. "Self-Supervised Learning for Contextualized Extractive

- Summarization”. *57th Annual Meeting of the Association for Computational Linguistics (ACL)*, 2019.
- [10] Dinghan Shen, Asli Celikyilmaz, Yizhe Zhang, Liqun Chen, **Xin Wang**, Jianfeng Gao, Lawrence Carin. “Towards Generating Long and Coherent Text with Multi-Level Latent Variable Models”. *57th Annual Meeting of the Association for Computational Linguistics (ACL)*, 2019.
- [9] Jiawei Wu, **Xin Wang**, William Yang Wang. “Extract and Edit: An Alternative to Back-Translation for Unsupervised Neural Machine Translation”. *17th Annual Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies (NAACL-HLT)*, 2019. **Oral Presentation**
- [8] **Xin Wang**, Jiawei Wu, Da Zhang, Yu Su, William Yang Wang. “Learning to Compose Topic-Aware Mixture of Experts for Zero-Shot Video Captioning”. *Thirty-Third AAAI Conference on Artificial Intelligence (AAAI)*, 2019. **Oral Presentation**
- [7] **Xin Wang***, Wenhan Xiong*, Hongmin Wang, William Yang Wang. “Look Before You Leap: Bridging Model-Free and Model-Based Reinforcement Learning for Planned-Ahead Vision-and-Language Navigation”. *European Conference on Computer Vision (ECCV)*, 2018.
- [6] Wenhua Chen, Jianshu Chen, Yu Su, **Xin Wang**, Dong Yu, Xifeng Yan, William Yang Wang. “XL-NBT: A Cross-lingual Neural Belief Tracking Framework”. *Conference on Empirical Methods in Natural Language Processing (EMNLP)*, 2018.
- [5] **Xin Wang***, Wenhua Chen*, Yuan-Fang Wang, William Yang Wang. “No Metrics Are Perfect: Adversarial Reward Learning for Visual Storytelling”. *56th Annual Meeting of the Association for Computational Linguistics (ACL)*, 2018. **Oral Presentation**
- [4] **Xin Wang**, Wenhua Chen, Jiawei Wu, Yuan-Fang Wang, William Yang Wang. “Video Captioning via Hierarchical Reinforcement Learning”. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2018.
- [3] **Xin Wang**, Yuan-Fang Wang, William Yang Wang. “Watch, Listen, and Describe: Globally and Locally Aligned Cross-Modal Attentions for Video Captioning”. *16th Annual Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies (NAACL-HLT)*, 2018.
- [2] Da Zhang, Xiyang Dai, **Xin Wang**, Yuan-Fang Wang. “S3D: Single Shot multi-Span Detector via Fully 3D Convolutional Network”. *29th British Machine Vision Conference (BMVC)*, 2018. **Oral Presentation**
- [1] **Xin Wang**, Geoffrey Oxholm, Da Zhang, Yuan-Fang Wang. “Multimodal Transfer: A Hierarchical Deep Convolutional Neural Network for Fast Artistic Style Transfer”. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2017.

Workshop Papers

- [3] Jiannan Xiang, **Xin Wang**, William Yang Wang. “Not All Actions Are Equal: Learning to Stop in Language-Grounded Urban Navigation”. *Visually Grounded Interaction and Language Workshop, Neural Information Processing Systems (NeurIPS)*, 2019.

- [2] **Xin Wang***, Vihan Jain*, Eugene Ie, William Yang Wang, Zornitsa Kozareva, Sujith Ravi. “Natural Language Grounded Multitask Navigation”. *Visually Grounded Interaction and Language Workshop, Neural Information Processing Systems (NeurIPS)*, 2019.
- [1] **Xin Wang**, William Yang Wang. “Zero-Shot Video Captioning with Topic-Aware Mixture of Experts”. *Continual Learning Workshop, Neural Information Processing Systems (NeurIPS)*, 2018.

Technical Reports

- [5] **Xin Wang***, Vihan Jain*, Eugene Ie, William Yang Wang, Zornitsa Kozareva, Sujith Ravi. “Generalized Natural Language Grounded Navigation via Environment-agnostic Multitask Learning”. *Under review*, 2019.
- [4] An Yan*, **Xin Wang***, Jiangtao Feng, Lei Li, William Yang Wang. “Cross-Lingual Vision-Language Navigation”. *Under review*, 2019.
- [3] **Xin Wang**, Qiuyuan Huang, Asli Celikyilmaz, Jianfeng Gao, Dinghan Shen, Yuan-Fang Wang, William Yang Wang, Lei Zhang. “Vision-Language Navigation Policy Learning and Adaptation”. *Under review by IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*, 2019. **Invited Paper**
- [2] Da Zhang, Xiyang Dai, **Xin Wang**, Yuan-Fang Wang. “Towards Effective and Efficient Temporal Activity Detection”. *Under review by International Journal of Computer Vision (IJCV)*, 2019. **Invited Paper**
- [1] Da Zhang, Hamid Maei, **Xin Wang**, Yuan-Fang Wang. “Deep Reinforcement Learning for Visual Object Tracking in Videos”. *arXiv:1701.08936*, 2017.

Patents

- [1] Geoffrey Oxholm, **Xin Wang**. “Multimodal style-transfer network for applying style features from multi-resolution style exemplars to input images”. *US Patent 15,619,114*, issued December 13, 2018.

PROFESSIONAL EXPERIENCE **University of California, Santa Barbara**

Graduate Student Researcher Sep. 2015 - Present
 Advisors: Professor William Yang Wang and Yuan-Fang Wang

- Lead the research in the intersection of language and vision, *e.g.* vision-to-language generation, embodied navigation, activity understanding in videos etc.

Google AI, Mountain View, CA, US

Research Intern Jun. 2019 - Sep. 2019
 Mentors: Sujith Ravi and Zornitsa Kozareva

- Worked on generalized natural language grounded navigation via environment-agnostic multitask learning.

Facebook AI Research (FAIR), Menlo Park, CA, US

Graduate Researcher Apr. 2019 - Jun. 2019
 Mentors: Xinlei Chen, Marcus Rohrbach, Dhruv Batra

- Worked on natural language grounded object detection in photo-realistic indoor environments.

Microsoft Research AI, Redmond, WA, US

Research Intern Jun. 2018 - Sep. 2018
 Mentors: Lei Zhang, Asli Celikyilmaz, Jianfeng Gao

- Worked on the task of vision-and-language navigation, to navigate a robot inside photo-realistic 3D environments by following natural language instructions.

- Combined the power of reinforcement learning and self-supervised imitation learning and achieved the new state-of-the-art performance (CVPR 2019 Best Student Paper Award).

Adobe Research, San Francisco, CA, US

Research Intern

Jun. 2017 - Sep. 2017

Mentors: Geoffrey Oxholm, Oliver Wang, Eli Shechtman, Mike Lukac

- Worked on the task of removing unwanted objects from a video and filling in plausible content and improved the runtime from hours to minutes.
- Deployed a research prototype—ProjectCloak, which was presented at Adobe MAX 2017 ([link](#)) and then featured in Adobe After Effects.

Adobe Research, San Francisco, CA, US

Research Intern

Jun. 2016 - Sep. 2016

Mentor: Geoffrey Oxholm

- Proposed a novel hierarchical approach for fast style transfer to generate high-quality stylized images (CVPR 2017).
- Presented the product demo, ArtisticEye ([link](#)), to the Adobe CEO Shantanu Narayen face to face.

Exacloud Inc., Hangzhou, China

Software Engineer Intern

Dec. 2014 - Mar. 2015

- Built an anti-crawler system for the company's website, based on access frequency, user information (like user-agents) and the analysis of users behaviors.

The University of Hong Kong, Hong Kong, China

Visiting Research Assistant

Jul. 2014 - Sep. 2014

Advisor: Professor Yizhou Yu

- Built an interactive video tooning system that transforms a video into a highly abstracted cartoon animation.

SERVICE

Session Chair

- natural language processing session, AAAI Conference on Artificial Intelligence (AAAI), 2019

Conference & Journal Reviewing

- Annual Meeting of the Association for Computational Linguistics (ACL)
- Conference on Empirical Methods in Natural Language Processing (EMNLP)
- Annual Conference of the North American Chapter of the Association for Computational Linguistics (NAACL)
- IEEE Conference on Computer Vision and Pattern Recognition (CVPR)
- International Conference on Computer Vision (ICCV)
- International Journal of Computer Vision (IJCV)
- Conference on Neural Information Processing Systems (NeurIPS)
- AAAI Conference on Artificial Intelligence (AAAI)
- Conference on Robot Learning (CoRL)
- International Joint Conference on Natural Language Processing (IJCNLP)
- The SIGNLL Conference on Computational Natural Language Learning (CoNLL)

Workshop Organizing

- *Co-organizer*, Workshop on Advances in Language and Vision Research (ALVR), ACL 2020 (*Under review*)
- *Co-organizer*, Workshop on Visually Grounded Self-Learning in the Human World, CVPR 2020 (*Under review*)
- *Co-organizer*, Workshop on Language Meets Video: Challenges for Comprehensive Video Understanding and Reasoning, CVPR 2020 (*Under review*)
- *Co-organizer*, Workshop on Closing the Loop Between Vision and Language (CLVL), ICCV 2019
- *Program Committee*, Workshop on Scene Graph Representation and Learning (SGRL), ICCV 2019
- *Program Committee*, Combined Workshop on Spatial Language Understanding & Grounded Communication for Robotics (SpLU-RoboNLP), NAACL 2019
- *Program Committee*, Southern California Natural Language Processing Symposium, 2018

TEACHING EXPERIENCE

Guest Lecturer	CS281B: Computer Vision and Image Analysis	Winter 2018
Teaching Assistant	CS190I: Intro to Natural Language Processing	Winter 2017
Teaching Assistant	CS180: Computer Graphics	Fall 2016
Teaching Assistant	CS48: Computer Science Project	Winter 2016
Teaching Assistant	CS32: Problem Solving with C++	Fall 2015

GRANT PROPOSAL WRITING

- [3] *Co-writer*, “Self-supervised Vision-Language Navigation”, Google Gift Award, 2019-2020. \$61,572 (PI: William Wang)
- [2] *Co-writer*, “Language, Vision and Knowledge”, ByteDance Gift Award, 2018-2020. \$130,000 (PI: William Wang)
- [1] *Co-writer*, “Deep Inverse Reinforcement Learning for Visual Storytelling”, Adobe Research Award, 2018. \$50,000 (PI: William Wang)

HONORS & AWARDS

CVPR Best Student Paper Award ($1/5160 \approx 0.02\%$)	2019
Adobe Research Fellowship Finalist	2019
Outstanding Graduates, Zhejiang University	2015
CCF Excellent Student Award (only 100 in China), China Computer Federation	2014
National Endeavor Scholarship, Ministry of Education, China	2012 - 2014
First Prize Outstanding Student Scholarship, Zhejiang University	2013 - 2014
Merit Student Award, Zhejiang University	2013 - 2014
Student Leadership Award, Zhejiang University	2013

MENTORING

- Jiawei Wu (Ph.D. student, UCSB)
- Hong Wang (Ph.D. student, UCSB)
- Wanrong Zhu (Ph.D. student, UCSB)
- Tsu-Jui Fu (Ph.D. student, UCSB)
- An Yan (Master’s student, UCSD)
- Jiannan Xiang (Undergraduate student, USTC)