Licheng Yu

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I am a Research Scientist Manager at Facebook AI. My research interest lies in the intersection between Computer Vision and Natural Language Processing. I completed my PhD in Computer Science from University of North Carolina at Chapel Hill in 2019. My advisor is Tamara L. Berg. My research goal is to build an artificial intelligent system that can communicate with people in a natural way, involving asking and answering questions, commonsense reasoning, and performing actions to better people's life.

Education

Ph.D in Computer Science, *University of North Carolina at Chapel Hill* 2014.08 — 2019.05
M.S in Information Engineering, *Shanghai Jiao Tong University* 2011.09 — 2014.04
B.S in Information Engineering, *Shanghai Jiao Tong University* 2007.09 — 2011.07

Work Experience

Facebook AI **Menlo Park, CA**
Research Scientist Manager *2023.06 — Present*

- Supporting a talented team working on Video Generation and its various applications.

Staff Research Scientist *2022.08 — 2023.06*

- Foundation Text-to-Image Generation model and its various applications.
- Multimodal (Vision+Language) Research and Applications for Ads.

Senior Research Scientist *2021.07 — 2022.08*

- Vision+Language Research, *e.g.*, large-scale multimodal pre-training, interactive visual search, etc.
- Multimodal Applications on E-Commerce, *e.g.*, IG Shops, Marketplace, Visual Search, etc.

Research Scientist *2020.03 — 2021.07*

- Vision+Language Research, *e.g.*, visual question answering, trace-guided image captioning, etc.
- Multimodal Applications on Ads Ranking, building content-based triggers and features.

Microsoft **Bellevue, WA**
Researcher *2019.06 — 2020.03*

- Vision+Language Research, *e.g.*, image-text pre-training, video-text pre-training, image synthesis, etc.

Publication

[45] Zhixing Zhang, Bichen Wu, Xiaoyan Wang, Yaqiao Luo, Luxin Zhang, Yinan Zhao, Peter Vajda, Dimitris Metaxas, **Licheng Yu**, "AVID: Any-Length Video Inpainting with Diffusion Model", in arXiv:2312.03816.

[44] Yuchao Gu, Yipin Zhou, Bichen Wu, **Licheng Yu**, Jia-Wei Liu, Rui Zhao, Jay Zhangjie Wu, David Junhao Zhang, Mike Zheng Shou, Kevin Tang, "VideoSwap: Customized Video Subject Swapping with Interactive Semantic Point Correspondence", in arXiv:2312.02087.

[43] Bichen Wu, Ching-Yao Chuang, Xiaoyan Wang, Yichen Jia, Kapil Krishnakumar, Tong Xiao, Feng Liang, **Licheng Yu**, Peter Vajda, "Fairy: Fast Parallelized Instruction-Guided Video-to-Video Synthesis", in arXiv:2312.13834.

[42] Animesh Sinha, Bo Sun, Anmol Kalia, Arantxa Casanova, Elliot Blanchard, David Yan, Winnie Zhang, Tony Nelli, Jiahui Chen, Hardik Shah, **Licheng Yu**, Mitesh Kumar Singh, Ankit Ramchandani, Maziar Sanjabi, Sonal Gupta, Amy Bearman, Dhruv Mahajan, "Text-to-Sticker: Style Tailoring Latent Diffusion Models for Human Expression", in arXiv:2311.10794

[41] Hu Xu, Saining Xie, Po-Yao Huang, **Licheng Yu**, Russell Howes, Gargi Ghosh Luke Zettlemoyer, Christoph Feichtenhofe, "CiT: Curation in Training for Effective Vision-Language Data", in ICCV 2023.

[40] Barry Menglong Yao, Yu Chen, Qifan Wang, Sijia Wang, Minqian Liu, Zhiyang Xu, **Licheng Yu**, Lifu Huang, "AMELI: Enhancing Multimodal Entity Linking with Fine-Grained Attributes", in arXiv:2305.14725.

[39] Medhini Narasimhan, **Licheng Yu**, Sean Bell, Ning Zhang, Trevor Darrell, "Learning and Verification of Task Structure in Instructional Videos", in arXiv:2303.13519.

[38] Tsu-Jui Fu, **Licheng Yu**, Ning Zhang, Cheng-Yang Fu, Jong-Chyi Su, William Yang Wang, Sean Bell, "Tell Me What Happened: Unifying Text-guided Video Completion via Multimodal Masked Video Generation", in CVPR 2023.

[37] Yiwu Zhong, **Licheng Yu**, Yang Bai, Shangwen Li, Xueting Yan, Yin Li, "Learning Procedure-aware Video Representation from Instructional Videos and Their Narrations", in CVPR 2023.

[36] Xiao Han, Xiatian Zhu, **Licheng Yu**, Li Zhang, Yi-Zhe Song, Tao Xiang, “FAME-ViL: Multi-Tasking Vision-Language Model for Heterogeneous Fashion Tasks", in CVPR 2023.

[35] Sangwoo Mo, Jong-Chyi Su, Kevin Chih-Yao Ma, Mido Assran, Ishan Misra, **Licheng Yu**, Sean Bell, “RoPAWS: Robust Semi-supervised Representation Learning from Uncurated Data", in ICLR 2023.

[34] Yunzhong He, Yuxin Tian, Mengjiao Wang, Feier Chen, **Licheng Yu**, Maolong Tang, Congcong Chen, Ning Zhang, Bin Kuang, Arul Prakash, “Que2Engage: Embedding-based Retrieval for Relevant and Engaging Products at Facebook Marketplace", in WWW 2023.

[33] Suvir Mirchandani, **Licheng Yu**, Mengjiao Wang, Animesh Sinha, Wenwen Jiang, Tao Xiang, Ning Zhang, “FaD-VLP: Fashion Vision-and-Language Pre-training towards Unified Retrieval and Captioning", in EMNLP 2022.

[32] **Licheng Yu**, Jun Chen, Animesh Sinha, Mengjiao Wang, Yu Chen, Tamara L. Berg, Ning Zhang, “CommerceMM: Large-Scale Commerce MultiModal Representation Learning with Omni Retrieval", in KDD 2022.

[31] Xiao Han, **Licheng Yu**, Xiatian Zhu, Li Zhang, Yi-Zhe Song, Tao Xiang, “FashionViL: Fashion-Focused Vision-and-Language Representation Learning", in ECCV 2022.

[30] Yuxuan Wang, Difei Gao, **Licheng Yu**, Weixian Lei, Matt Feiszli, Mike Zheng Shou, “Generic Event Boundary Captioning: A Benchmark for Status Changes Understanding", in ECCV 2022.

[29] Mingyang Zhou*, **Licheng Yu***, Amanpreet Singh, Mengjiao Wang, Yu Zhou, Ning Zhang, “Unsupervised Vision-and-Language Pre-training via Retrieval-based Multi-Granular Alignment", in CVPR 2022 (Oral). (* denotes equal contribution).

[28] Jie Lei, Xinlei Chen, Ning Zhang, Mengjiao Wang, Mohit Bansal, Tamara L. Berg, **Licheng Yu**, “LOOPITR: Combining Dual and Cross Encoder Architectures for Image-Text Retrieval", in arxiv:2203.05465v1.

[27] Linjie Li, Jie Lei, Zhe Gan, **Licheng Yu**, Yen-Chun Chen, Rohit Pillai, Yu Cheng, Luowei Zhou, Xin Eric Wang, William Yang Wang, Tamara L. Berg, Mohit Bansal, Jingjing Liu, Lijuan Wang, Zicheng Liu, “VALUE: A Multi-Task Benchmark for Video-and-Language Understanding Evaluation", in NeurIPS 2021.

[26] Zihang Meng, **Licheng Yu**, Ning Zhang, Tamara L. Berg, Babak Damavandi, Vikas Singh, Amy Bearman, “Connecting What to Say With Where to Look by Modeling Human Attention Traces", in CVPR 2021.

[25] Jie Lei, **Licheng Yu**, Tamara L. Berg, Mohit Bansal, “What Happens Next? Video-and-Language Future Event Prediction", in EMNLP 2020.

[24] Linjie Li*, Yen-Chun Chen*, Yu Cheng, Zhe Gan, **Licheng Yu**, Jingjing Liu, “HERO: Hierarchical Encoder for Video+Language Omni-representation Pre-training", in EMNLP 2020 (* denotes equal contribution).

[23] Jize Cao, Zhe Gan, Yu Cheng, **Licheng Yu**, Yen-Chun Chen, Jingjing Liu, “Behind the Scene: Revealing the Secrets of Pre-trained Vision-and-Language Models", in ECCV 2020 (spotlight).

[22] Yen-Chun Chen*, Linjie Li*, **Licheng Yu***, Ahmed El Kholy, Faisal Ahmed, Zhe Gan, Yu Cheng, Jingjing Liu, “UNITER: Learning Universal Image-Text Representations", in ECCV 2020 (* denotes equal contribution).

[21] Jie Lei, **Licheng Yu**, Tamara L. Berg, Mohit Bansal, “TVR: A Large-Scale Dataset for Video-Subtitle Moment Retrieval", in ECCV 2020.

[20] Jie Lei, **Licheng Yu**, Tamara L. Berg, Mohit Bansal, “TVQA+: Spatio-Temporal Grounding for Video Question Answering", in ACL 2020.

[19] Yandong Li, Yu Cheng, Zhe Gan, **Licheng Yu**, Liqiang Wang, Jingjing Liu, “BachGAN: High-Resolution Image Synthesis from Salient Object Layout", in CVPR 2020.

[18] Jingzhou Liu, Wenhu Chen, Yu Cheng, Zhe Gan, **Licheng Yu**, Yiming Yang, Jingjing Liu, “VIOLIN: A Large-Scale Dataset for Video-and-Language Inference", in CVPR 2020.

[17] **Licheng Yu**, Xinlei Chen, Georgia Gkioxari, Mohit Bansal, Tamara L. Berg, Dhruv Batra, “Multi-target Embodied Question Answering", in CVPR 2019.

[16] Hao Tan, **Licheng Yu**, Mohit Bansal, “Learning to Navigate Unseen Environments: Back Translation with Environmental Dropout", in NAACL 2019. (Rank 1 on VLN Leaderboard).

[15] Jie Lei, **Licheng Yu**, Mohit Bansal, Tamara L. Berg, “TVQA: Localized Compositional Video Question Answering”, in EMNLP 2018 (oral).

[14] **Licheng Yu**, Zhe Lin, Xiaohui Shen, Jimei Yang, Xin Lu, Mohit Bansal, Tamara L. Berg, “MAttNet: Modular Attention Network for Referring Expression Comprehension”, in CVPR 2018.

[13] Anja Belz, TL Berg, **Licheng Yu**, “From image to language and back again”, in JNLE 2018.

[12] **Licheng Yu**, Mohit Bansal, Tamara L. Berg, “ Hierarchically-Attentive RNN for Album Summarization and Storytelling”, in EMNLP 2017.

[11] **Licheng Yu**, Hao Tan, Mohit Bansal, Tamara L. Berg, “A Joint Speaker-Listener-Reinforcer Model for referring expressions.”, in CVPR 2017 (spotlight).

[10] Hongteng Xu, **Licheng Yu**, Mark Davenport, Hongyuan Zha, “A unified framework for manifold landmarking”, in IEEE Transactions on Signal Processing, 2018.

[9] **Licheng Yu**, Patrick Poirson, Shan Yang, Alexander C. Berg, Tamara L. Berg, “Modeling Context in Referring Expressions”, in ECCV, 2016 (Spotlight).

[8] Shan Yang, Zherong Pan, Tanya Ambert, Ke Wang, **Licheng Yu**, Tamara L. Berg, Ming C. Lin, “Detailed Garment Recovery from a Single-View Image”, in ACM Transactions on Graphics 2017.

[7] **Licheng Yu**, Eunbyung Park, Alexander C. Berg, Tamara L. Berg, “Visual Madlibs: Fill-in-the-Blank Description Generation and Question Answering”, in ICCV, 2015.

[6] Yi Xu, **Licheng Yu**, Hongteng Xu, Truong Nguyen, “Vector Sparse Representation of Color Image Using Quaternion Matrix Analysis." in IEEE Transactions on Image Processing (TIP), 2015.

[5] **Licheng Yu***,Hongteng Xu*, Hongyuan Zha, Yi Xu. “Dictionary Learning with Mutually Reinforcing Group-Graph Structures." in AAAI, 2015 (* denotes equal contribution).

[4] **Licheng Yu**, Yi Xu, Hongteng Xu, Hao Zhang, “Quaternion-based Sparse Representation of Color Image." in ICME, 2013 (Oral).

[3] **Licheng Yu**, Yi Xu, Hongteng Xu, “Self-Example Based Super-resolution with Fractal-based Gradient Enhancement.” in ICME workshop, 2013.

[2] **Licheng Yu**, Yi Xu, Bo Zhang, “Single Image Super-resolution via Phase Congruency Analysis." in VCIP, 2013 (Oral).

[1] **Licheng Yu**, Hongteng Xu, Yi Xu, Xiaokang Yang, “Robust Single Image Super-resolution based on Gradient Enhancement", in APSIPA 2012.

Intern Experience

Facebook AI — **Menlo Park, CA**
Research Intern — *2018.05 — 2018.08*
- Embodied Question Answering - robot navigation in an unseen environment answering a given question.

Adobe Research — **San Jose, CA**
Computer Vision Research Intern — *2017.05 — 2017.08*
- Referring Expression Comprehension - localize an object described by a sentence.
- Project page: `http://vision2.cs.unc.edu/refer`

eBay Research — **San Jose, CA**
Computer Vision Research Intern — *2016.05 — 2016.08*
- Product attribute prediction and localization.
- US Patent 17,165,481: Visual aspect localization presentation
- US Patent 11,200,273: Parallel prediction of multiple image aspects

Activities

Reviewer of CVPR, ICCV, ECCV, ACL, EMNLP, NAACL, TPAMI	2014 – now
Organizer of VALUE Challenge, ICCV 2021	2021.10
Organizer of LVVU Workshop, CVPR 2020	2020.06
Organizer of Tutorial - Recent Advances in Vision-and-Language Research, CVPR 2020	2020.06
Winner of VQA 2020 Challenge	2020.06
Spotlight Presentation at CVPR 2017	2017.07
Spotlight Presentation at ECCV 2016	2016.09

Skills

Tools and Languages	Python, PHP, Java, Javascript, C++/C, Lua, Git, LaTeX, MarkDown
Framework	PyTorch, TensorFlow, Torch7, Caffe
Communication	Chinese, English