# Licheng Yu

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I am now a Senior Research Scientist at Facebook AI. My research interest lies in the intersection of 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 the questions, conduct 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 Electrical and Computer Engineering**, *Georgia Institute of Technology* 2011.09 — 2014.04
**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

**Senior Research Scientist** **2020.03 — Present**
*Facebook AI* *Menlo Park, CA*

- Vision+Language Research, including unsupervised multimodal pre-training, trace-guided image captioning, etc.
- Multimodal Applications on Commerce and Ads Ranking.

**Researcher** **2019.06 — 2020.03**
*Microsoft Dynamics 365 AI Research* *Bellevue, WA*

- Vision+Language Research, including Image-Text Pre-training, Video-Text Pre-training, Image Synthesis, etc.

## Publication

[30] **Licheng Yu**, Jun Chen, Animesh Sinha, Mengjiao MJ Wang, Yu Chen, Tamara L. Berg, Ning Zhang, "CommerceMM: Large-Scale Commerce MultiModal Representation Learning with Omni Retrieval", in arxiv:2202.07247v1.

[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. (* 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 Special Sessions of APSIPA 2012

## Intern Experience

**Research Intern** **2018.05 — 2018.08**
*Facebook AI* *Menlo Park, CA*

- Embodied Question Answering - robot navigation in an unseen environment answering a given question.

**Computer Vision Research Intern** **2017.05 — 2017.08**
*Adobe Research* *San Jose, CA*

- Referring Expression Comprehension - Localize an object described by a sentence.
- Project page: `http://vision2.cs.unc.edu/refer`

**Computer Vision Research Intern** **2016.05 — 2016.08**
*eBay Research* *San Jose, CA*

- 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

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|---|---|
| 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

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