

Yaojie Liu

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EXPERIENCE

Senior Research Scientist , Google	04/2023 - present
• Launch Face Unlock on Pixel 7a & Pixel Fold & Pixel 8/8 Pro as Strong Authentication	
Research Scientist , Google Research	06/2021 - 04/2023
• Launch Face Unlock on Pixel 7 & Pixel 7 Pro	
Research Intern , HMI, Robert Bosch LLC	06/2020 - 08/2020
• Mentors: Xinyu Huang, Liu Ren	
• Project: Face Shadow Removal/Relighting	
Research Intern , AI Research, Apple	05/2019 - 08/2019
• Mentors: Barry Theobald, Nicholas Apostoloff	
• Project: Audio-Visual Modeling	

EDUCATION

Ph.D., Computer Science , Michigan State University, USA	05/2016 - 05/2021
• Advisor: Xiaoming Liu	
• Committee: Xiaoming Liu (chair), Anil Jain, Arun Ross, Daniel Morris	
• Dissertation: Face Anti-Spoofing: Detection, Generalization, and Visualization	
M.S., Computer Science , Ohio State University, USA	08/2014 - 05/2016
• Advisor: Aleix Martinez	
• Project: Global and Local Fitting of Facial Landmarks and Action Units	
B.E., Communication Engineering , UESTC, China	08/2010 - 05/2014
• Advisor: Chang Shu	
• Thesis: Image Inpainting	

PUBLICATIONS

I have >2000 citations according to [Google Scholar](#), and my **h-index** is 12. (* denotes equal contribution)

Conference Papers:

- Yiyu Sun, **Yaojie Liu**, Xiaoming Liu, Yixuan Li, Wen-Sheng Chu, “Rethinking Domain Generalization for Face Anti-spoofing: Separability and Alignment,” *IEEE Computer Vision and Pattern Recognition (CVPR)*, 2023. (25% Acceptance Rate) [[PDF](#), [Code](#)]
- Yaojie Liu***, Andrew Hou*, Xinyu Huang, Liu Ren, Xiaoming Liu, “Blind Removal of Facial Foreign Shadows,” *Proc. British Machine Vision Conference (BMVC)*, 2022. [[PDF](#), [Code](#), [Demo](#)]
- Xiao Guo, **Yaojie Liu**, Anil Jain, Xiaoming Liu, “Multi-domain Learning for Updating Face Anti-spoofing Models,” *Proc. European Conference of Computer Vision (ECCV)*, 2022. (**Oral, 2.7% Acceptance Rate**). [[PDF](#), [Code](#)]
- Hsin-Ping Huang, Deqing Sun, **Yaojie Liu**, Wen-Sheng Chu, Taihong Xiao, Jinwei Yuan, Hartwig Adam, Ming-Hsuan Yang, “Adaptive Transformers for Robust Few-shot Cross-domain Face Anti-spoofing,” *Proc. European Conference of Computer Vision (ECCV)*, 2022. (20% Acceptance Rate). [[PDF](#), [Code](#)]
- Yaojie Liu**, Jeol Stehouwer, Xiaoming Liu, “On Disentangling Spoof Traces for Generic Face Anti-Spoofing,” *Proc. European Conference of Computer Vision (ECCV)*, 2020. (26% Acceptance Rate) [[PDF](#), [Code](#), [Short Video](#), [Long Video](#)]
- Jeol Stehouwer, Amin Jourabloo, **Yaojie Liu**, Xiaoming Liu, “Noise Modeling, Synthesis and Classification for Generic Object Anti-Spoofing,” *IEEE Computer Vision and Pattern Recognition (CVPR)*, 2020. (25% Acceptance Rate) [[PDF](#), [Code](#), [Data](#), [Short Video](#)]
- Yaojie Liu**, Jeol Stehouwer, Amin Jourabloo, Xiaoming Liu, “Deep Tree Learning for Zero-shot Face Anti-spoofing,” *IEEE Computer Vision and Pattern Recognition (CVPR)*, 2019. (**Oral, Best Paper Finalist, 5.6% Acceptance Rate**.) [[PDF](#), [Code](#), [Data](#), [Video](#), [Poster](#)]
- Yaojie Liu***, Amin Jourabloo*, Xiaoming Liu, “Face De-Spoofing: Anti-Spoofing via Noise Modeling,” *Proc. European Conference of Computer Vision (ECCV)*, 2018. (31.8% Acceptance Rate) [[PDF](#), [Code](#), [Poster](#)]

9. **Yaojie Liu***, Amin Jourabloo*, Xiaoming Liu, “Learning Deep Models for Face Anti-Spoofing: Binary or Auxiliary Supervision,” *IEEE Computer Vision and Pattern Recognition (CVPR)*, 2018. (30% Acceptance Rate) [[PDF](#), [Data](#), [Poster](#)]
10. **Yaojie Liu**, Amin Jourabloo, William Ren, Xiaoming Liu, “Dense Face Alignment,” *International Conference on Computer Vision (ICCV) Workshop on Analysis and Modeling of Faces and Gestures (AMFG)*, 2017. [[PDF](#), [Code](#), [Poster](#)]
11. **Yaojie Liu***, Yousef Atoum*, Amin Jourabloo*, Xiaoming Liu, “Face Anti-Spoofing Using Patch and Depth-Based CNNs,” *IEEE International Joint Conference on Biometrics (IJCB)*, 2017. [[PDF](#), [Poster](#)]
12. Ruiqi Zhao, Yan Wang, C.F. Benitez-Quiroz, **Yaojie Liu**, A.M. Martinez, “Fast and Precise Face Alignment and 3D Shape Reconstruction from a Single 2D Image.” *European Conference on Computer Vision Workshop (ECCVW)*, 2016. [[PDF](#)]
13. **Yaojie Liu**, Chang Shu, “A Comparison of Image Inpainting Techniques.” *International Conference on Graphic and Image Processing (ICGIP)*, 2015. [[Link](#)]

Journal Papers:

14. Xiaohong Liu, **Yaojie Liu**, Jun Chen, Xiaoming Liu, “PSCC-Net: Progressive Spatio-Channel Correlation Network for Image Manipulation Detection and Localization,” in *IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)*, doi:10.1109/TCSVT.2022.3189545, 2022. [[PDF](#)]
15. **Yaojie Liu**, Xiaoming Liu, “Spoof Trace Disentanglement for Generic Face Anti-Spoofing” in *IEEE Transaction on Pattern Analysis and Machine Intelligence (PAMI)*, doi:10.1109/TPAMI.2022.3176387, 2022. [[PDF](#)]
16. Chang Shu, **Yaojie Liu**, “Inpainting: Survey and Experiments” *International Journal of Signal Processing, Image Processing and Pattern Recognition*, Vol. 9, Issue. 10, pp. 21-36, 2016. [[Link](#)]
17. **Yaojie Liu**, Chang Shu, Zhizhong Fu “Dynamic Gesture Localization and Recognition Algorithm Based on Skeletonization” *Electronic Science and Technology*, Vol. 3, pp. 005, 2014. (in Chinese) [[Link](#)]

Book Chapters:

18. **Yaojie Liu**, Jeol Stehouwer, Amin Jourabloo, Xiaoming Liu, “Presentation Attack Detection for Face in Mobile Phones” *Selfie Biometrics*, Ajita Rattani, Reza Derakhahani, and Arun Ross, Springer, 2019. [[PDF](#)]

PATENT

- Soyoung Péraud, Wen-Sheng Chu, **Yaojie Liu**, “Detecting Out-of-Distribution Use Cases in an Object Classification System,” Serial No. PCT/US2023/034282, filed on Oct 02, 2023.
- **Yaojie Liu**, Wen-Sheng Chu, “Large-Model Copilot: A System to Boost Generalization of Smaller Models,” Serial No. PCT/US2023/0760926, filed on Oct 05, 2023.
- **Yaojie Liu**, Wen-Sheng Chu, “Multi-Scale Model Ensemble for Classification of Objects,” U.S. Serial No. 18/150,426, filed on Jan 05, 2023.
- **Yaojie Liu**, Amin Jourabloo, Xiaoming Liu, “Improved Spoof Detection for Facial Recognition,” U.S. Serial No. 62/626,486, filed on Feb 05, 2018.

HONORS & AWARDS

- | | |
|---|-----------|
| • ECCV 2022 Outstanding Reviewer Award (205 selected from 4,719 reviewers) | 2022 |
| • CVPR 2021 Outstanding Reviewer Award (1063 selected from 5,246 reviewers) | 2021 |
| • Fitch Beach Award nominee (one winner in entire CSE department), MSU | 2021 |
| • Outstanding Graduate Student Award, CSE Department at MSU | 2021 |
| • ECCV 2020 Outstanding Reviewer Award (215 selected from 2,830 reviewers) | 2020 |
| • College of Engineering Dissertation Completion Fellowship, MSU | 2020 |
| • CVPR 2019 Best Paper Finalist (45 selected from 1,294 accepted papers) | 2019 |
| • Honorable Mention, Engineering Graduate Research Symposium, MSU | 2018 |
| • College of Engineering Distinguished Fellowship, MSU | 2016 |
| • Best Bachelor Thesis Award, UESTC | 2014 |
| • People’s Scholarship for Excellent University Student, UESTC | 2011-2013 |

PROFESSIONAL SERVICES

- **Area Chair:** BMVC'22
- **Co-Organizer/Lecturer:**
 - IJCB 2020 Tutorial, "Recent Advances on Detecting Face Spoofing and Face Manipulation", half-day. [\[1, 2, 3\]](#)
 - BTAS 2019 Tutorial, "Face Anti-Spoofing: Past, Present and Future", half-day. [\[1, 2, 3\]](#)
 - CVPR 2018 Demo, "Real-time Face Anti-spoofing System", full-day. [\[Link\]](#)
- **Conference Reviewer:** CVPR'19-23, ICCV'19-23, ECCV'20-22, NeurIPS'20-22, AAAI'20-22, ICML'21-23, ICLR'22, WACV'18-22, ACCV'20-22, BTAS'18, ICB'19, ICME'20-21, PRCV'19-20
- **Journal Reviewer:** TPAMI, IJCV, TIP, TIFS, CVIU, Neurocomputing, Pattern Recognition, JEI, Image and Vision Computing, TBIOM, TOMM, IET Computer Vision, IEEE Access, JCST
- **Mentoring:**
 - Manli Shu (Google, Summer 2023 -)
 - Yiyun Sun (Google, Summer 2022 - Fall 2022)
 - Steven Grosz (Google, Summer 2021 - Fall 2021)
 - Hsin-Ping Huang (Google, Summer 2021 - Fall 2021)
 - Xiao Guo (MSU, Summer 2021 - Fall 2021)
 - Xiaohong Liu (MSU, Summer 2020 - Fall 2020)
 - Xiaohan Zhang (MSU, Fall 2016 - Spring 2017)
 - William Ren (MSU, Summer 2016, Summer 2017)

INVITED TALKS

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| • Interview @ IEEE Biometrics Council Newsletter. [Link] | 6/2021 |
| • "Face Anti-Spoofing: Detect, Visualize, and Generalize", Sichuan University. | 1/2020 |
| • "Face Anti-Spoofing: Detect, Visualize, and Generalize", UESTC. | 1/2020 |
| • "Deep Tree Learning for Zero-shot Face Anti-spoofing", MSU/ND Vision Workshop. | 9/2019 |
| • "Deep Tree Learning for Zero-shot Face Anti-spoofing", Oral Presentation, CVPR. | 6/2019 |
| • "Dense Face Alignment", Midwest Vision Workshop. | 4/2017 |

TECHNICAL SKILLS

- **Languages:** Python, C/C++, Java, Shell Script, Matlab, HTML, R
- **Tools:** Tensorflow, PyTorch, Caffe, Apache Beam, Git, OpenCV, L^AT_EX
- **Systems:** Linux, MacOS, Windows