

# Yaojie Liu

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## EXPERIENCE

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| <b>Research Scientist</b> , Google Research    | 06/2021 - present |
| • Face Unlock on Pixel 7 / Pixel 7 Pro         |                   |
| <b>Research Intern</b> , HMI, Robert Bosch LLC | 06/2020 - 08/2020 |
| • Mentors: Xinyu Huang, Liu Ren                |                   |
| • Project: Face Shadow Removal/Relighting      |                   |
| <b>Research Intern</b> , AI Research, Apple    | 05/2019 - 08/2019 |
| • Mentors: Barry Theobald, Nicholas Apostoloff |                   |
| • Project: Audio-Visual Modeling               |                   |

## EDUCATION

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| <b>Ph.D., Computer Science</b> , 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 |                   |
| <b>M.S., Computer Science</b> , Ohio State University, USA                       | 08/2014 - 05/2016 |
| • Advisor: Aleix Martinez  |                   |
| • Project: Global and Local Fitting of Facial Landmarks and Action Units         |                   |
| <b>B.E., Communication Engineering</b> , UESTC, China                            | 08/2010 - 05/2014 |
| • Advisor: Chang Shu   |                   |
| • Thesis: Image Inpainting   |                   |

## PUBLICATIONS

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I have >1500 citations according to [Google Scholar](#), and my **h-index** is 10. (\* denotes equal contribution)

### Conference Papers:

- 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](#)]
- 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](#)]

9. **Yaojie Liu**, Amin Jourabloo, William Ren, Xiaoming Liu, “Dense Face Alignment,” *International Conference on Computer Vision (ICCVW) Workshop on Analysis and Modeling of Faces and Gestures (AMFG)*, 2017. [[PDF](#), [Code](#), [Poster](#)]
10. **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](#)]
11. 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](#)]
12. **Yaojie Liu**, Chang Shu, “A Comparison of Image Inpainting Techniques.” *International Conference on Graphic and Image Processing (ICGIP)*, 2015. [[Link](#)]

#### Journal Papers:

13. 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](#)]
14. **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](#)]
15. 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](#)]
16. **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:

17. **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

- **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

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|---|-----------|
| • 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

- **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](#)]
- **Area Chair:** BMVC’22
- **Conference Reviewer:** CVPR’19-23, ICCV’19-21, ECCV’20-22, NeurIPS’20-22, AAAI’20-22, ICML’21-22, 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, JEL, Image and Vision Computing, TBIOM, TOMM, IET Computer Vision, IEEE Access, JCST
- **Mentoring:**
  - Yiyu Sun (Google, Summer 2022 - Fall 2022)
  - 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)

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## INVITED TALKS

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| • “Face Anti-Spoofing: Detect, Visualize, and Generalize”, Sichuan University.    | <i>1/2020</i> |
| • “Face Anti-Spoofing: Detect, Visualize, and Generalize”, UESTC.                 | <i>1/2020</i> |
| • “Deep Tree Learning for Zero-shot Face Anti-spoofing”, MSU/ND Vision Workshop.  | <i>9/2019</i> |
| • “Deep Tree Learning for Zero-shot Face Anti-spoofing”, Oral Presentation, CVPR. | <i>6/2019</i> |
| • “Dense Face Alignment”, Midwest Vision Workshop.                                | <i>4/2017</i> |

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## TECHNICAL SKILLS

**Languages:** Python, C/C++, Java, Shell Script, Matlab, HTML, R  
**Tools:** Tensorflow, PyTorch, Caffe, MatConvNet, Git, OpenCV, L<sup>A</sup>T<sub>E</sub>X  
**Systems:** Linux, MacOS, Windows