

## Yaojie Liu

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CONTACT INFORMATION	Department of Computer Science and Engineering, Michigan State University, East Lansing, MI 48824, USA	<i>E-mail:</i> <a href="mailto:liuyaoj1@msu.edu">liuyaoj1@msu.edu</a> <i>Phone:</i> (614)-886-6885 <i>Web:</i> <a href="http://www.cse.msu.edu/~liuyaoj1/">www.cse.msu.edu/~liuyaoj1/</a>
JOB INTERESTS	A full-time position in 2021 Spring in the area of computer vision and deep learning.	
RESEARCH INTERESTS	Computer Vision, Deep Learning, Face Analysis, Image Synthesis, Biometrics, Low-level Vision, Audio-Visual Modeling, Image Forensic.	
EDUCATION	<b>Michigan State University, MI, USA</b> Ph.D. Candidate in Computer Science, May 2016 - May. 2021 (Expected) <ul style="list-style-type: none"><li>• Dissertation Title: “Face Anti-Spoofing: Detection, Generalization, and Visualization”</li><li>• Advisor: Dr. Xiaoming Liu</li><li>• Thesis committee: Xiaoming Liu (chair), Anil Jain, Arun Ross, Daniel Morris</li><li>• GPA: 3.67/4</li></ul> <b>The Ohio State University, OH, USA</b> M.S. in Computer Science, Sep. 2014 - Apr. 2016 <ul style="list-style-type: none"><li>• Research Title: “Global and Local Fitting of Facial Landmarks and Action Units (AUs)”</li><li>• Advisor: Dr. Aleix Martinez</li><li>• GPA: 3.88/4</li></ul> <b>University of Electronic Science and Technology of China, Sichuan, China</b> B.E. in Communication Engineering, Sep. 2010 - Apr. 2014 <ul style="list-style-type: none"><li>• Dissertation Title: “Image Inpainting”</li><li>• Advisor: Dr. Chang Shu</li><li>• GPA: 3.92/4</li></ul>	
WORKING EXPERIENCES	<b>Bosch Research, Computer Vision Intern</b> Sunnyvale, CA Mentor: Dr. Xinyu Huang, Dr. Liu Ren Research topic: Face Shadow Removal/Relighting	<b>May 2020 - Aug. 2020</b>
	<b>Apple Inc., AI Research Intern</b> Cupertino, CA Mentor: Dr. Barry Theobald, Dr. Nicholas Apostoloff Research topic: Audio-visual Modeling	<b>May 2019 - Aug. 2019</b>
	<b>Michigan State University, Research Assistant</b> East Lansing, MI	<b>May 2016 - Now</b>
RESEARCH HIGHLIGHTS	In the area of face anti-spoofing, I lead the R&D at our team, publish <b>7</b> papers, <b>1</b> under review, release <b>2</b> databases, file <b>1</b> patent, organize <b>2</b> half-day tutorials and <b>1</b> full-day demo. The papers receive overall <b>&gt;500</b> citations, the databases are distributed to <b>&gt;700</b> research groups, and our code receive <b>~300</b> stars & <b>90</b> forks on GitHub. In U.S. government-organized independent evaluation,	

our RGB camera-based face anti-spoofing solution can achieve **98.4%** TDR at **0.2%** FDR and **0.999** AUC. Our research on face anti-spoofing has been covered by MSUToday [\[News\]](#). Here are some examples of our face anti-spoofing systems [\[Video\]](#).

## PUBLICATIONS

I have >600 citations according to [Google Scholar](#), and my h-index is 7. (\* denotes equal contribution)

### Conference Papers

1. **Yaojie Liu**, Xinyu Huang, Ren Liu, Xiaoming Liu, “Facial Foreign Shadow Detection and Removal via Spatio-Temporal Consistency,” under review in CVPR 2021.
2. Xiaohong Liu, **Yaojie Liu**, Jun Chen, Xiaoming Liu, “PSSC-Net: Progressive Spatio-Channel Correlation Network for Image Manipulation Detection and Localization,” under review in CVPR 2021.
3. **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) [\[PDF\]](#) [\[Code\]](#) [\[Short Video\]](#) [\[Long Video\]](#)
4. 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) [\[PDF\]](#) [\[Code\]](#) [\[Database\]](#) [\[Short Video\]](#)
5. **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.**) [\[PDF\]](#) [\[Code\]](#) [\[Database\]](#) [\[Video\]](#) [\[Poster\]](#)
6. **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) [\[PDF\]](#) [\[Code\]](#) [\[Poster\]](#)
7. **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) [\[PDF\]](#) [\[Database\]](#) [\[Poster\]](#)
8. **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. [\[PDF\]](#) [\[Code\]](#) [\[Poster\]](#)
9. **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. [\[PDF\]](#) [\[Poster\]](#)
10. 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. [\[PDF\]](#)
11. **Yaojie Liu**, Chang Shu, “A Comparison of Image Inpainting Techniques.” International Conference on Graphic and Image Processing (ICGIP), 2015. [\[Link\]](#)

## Journal Papers

12. **Yaojie Liu**, Xiaoming Liu, “Physics-Guided Spoof Trace Disentanglement for Generic Face Anti-Spoofing” under review in IEEE Transaction on Pattern Analysis and Machine Intelligence (PAMI), 2020.
13. 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, October 2016. [\[Link\]](#)
14. **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

15. **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, Eds, Springer-Verlag, 2019. [\[PDF\]](#)

## PATENTS

**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 AND AWARDS

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| • ECCV 2020 Outstanding Reviewer Award (215 selected from 2,830 reviewers) | <b>2020</b> |
| • College of Engineering Dissertation Completion Fellowship, MSU           | <b>2020</b> |
| • CVPR 2019 Best Paper Finalist (45 selected from 1,294 accepted papers)   | <b>2019</b> |
| • Honorable Mention, Engineering Graduate Research Symposium, MSU          | <b>2018</b> |
| • College of Engineering Distinguished Fellowship, MSU                     | <b>2016</b> |
| • Best Bachelor Thesis Award, UESTC  | <b>2014</b> |
| • First Rank, People’s Scholarship for Excellent Student, China            | <b>2013</b> |
| • Second Rank, People’s Scholarship for Excellent Student, China           | <b>2012</b> |
| • Research fund from Institute of Electronic Science and Technology, UESTC | <b>2012</b> |
| • Research fund from Undergraduate Innovation Foundation, UESTC            | <b>2011</b> |
| • First Rank, People’s Scholarship for Excellent University Student, China | <b>2011</b> |

## PROFESSIONAL SERVICES

### Co-Organizer/Lecturer

- Half-day Tutorial, “Secure the Face System: Recent Advances on Detecting Face Spoof Attacks and Digital Face Manipulation ”@ International Joint Conference on Biometrics (IJCB), 2020 [\[Session1\]](#) [\[Session2\]](#) [\[Session3\]](#)
- Half-day Tutorial, “Face Anti-Spoofing: Past, Present and Future”@ International Conference on Biometrics: Theory Applications and Systems (BTAS), 2019 [\[Session1\]](#) [\[Session2\]](#) [\[Session3\]](#)

- Full-day Demo, “Real-time Face Anti-spoofing System” @ IEEE Computer Vision and Pattern Recognition (CVPR), 2018. [\[Link\]](#)

### Conference Reviewer

- Computer Vision and Pattern Recognition (CVPR) **2019-2021**
- International Conference on Computer Vision (ICCV) **2019**
- European Conference of Computer Vision (ECCV) **2020**
- Conference on Neural Information Processing Systems (NeurIPS) **2020**
- AAAI Conference on Artificial Intelligence (AAAI) **2020-2021**
- Winter Conference on Applications of Computer Vision (WACV) **2021**
- Asian Conference of Computer Vision (ACCV) **2020**
- International Conference on Biometrics: Theory Applications and Systems (BTAS) **2018**
- IAPR International Conference On Biometrics (ICB) **2019**
- International Conference on Multimedia and Expo (ICME) **2020-2021**
- Chinese Conference on Pattern Recognition and Computer Vision (PRCV) **2019-2020**

### Journal Reviewer

- IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI) **2020**
- IEEE Transactions on Image Processing (TIP) **2019-2020**
- IEEE Transactions on Information Forensics and Security (TIFS) **2019-2020**
- Computer Vision and Image Understanding (CVIU) **2019-2020**
- Neurocomputing **2019-2020**
- Journal of Electronic Imaging (JEI) **2020**
- Image and Vision Computing **2020**
- IEEE Transactions on Biometrics, Behavior, and Identity Science (TBIOM) **2020**
- ACM Transactions on Multimedia Computing, Communications, and Applications (TOMM) **2019**
- IET Computer Vision **2019**
- IEEE Access **2019**
- Journal of Computer Science and Technology (JCST) **2018**

### Mentoring

- Xiaohong Liu (Ph.D. in C.S., 2020, McMaster University)
- Xiaohan Zhang (B.S. in C.S., 2017, Michigan State University)
- William Ren (High School Student, Summer 2016, Summer 2017)

## TALKS

- Invited talk, Sichuan University, China. **Jan. 2020**  
“Face Anti-Spoofing: Detect, Visualize, and Generalize”
- Invited talk, University of Electronic Science and Technology of China, China. **Jan. 2020**  
“Face Anti-Spoofing: Detect, Visualize, and Generalize”
- Invited talk, MSU/ND vision workshop, Notre Dame IN. **Sept. 2019**  
“Deep Tree Learning for Zero-shot Face Anti-spoofing”
- Oral Presentation, CVPR. **Jun. 2019**  
“Deep Tree Learning for Zero-shot Face Anti-spoofing”
- Invited talk, Midwest vision workshop, Chicago IL. **Apr. 2017**  
“Dense Face Alignment”

## SKILLS

- Programming Language: Python, C/C++, Java, Git, Bash, HTML, SQL, R, L<sup>A</sup>T<sub>E</sub>X, Lisp
- Operating Systems: Linux, MacOS, Windows
- Signal Processing: Matlab
- Computer Vision Library: OpenCV
- Deep Learning: Tensorflow, PyTorch, MatConvNet, Caffe.