Yaojie Liu

CONTACT INFORMATION

Department of Computer Science and Engineering,
Michigan State University,
East Lansing, MI 48824, USA

E-mail: liuyaoj1@msu.edu
Phone: (614)-886-6885
Web: www.cse.msu.edu/~liuyaoj1/

JOB INTERESTS

I'm actively looking for a full-time position in 2021 Spring in the area of computer vision and deep learning. If you are interested in my background, please don't hestitate to contact me.

RESEARCH INTERESTS

Computer Vision, Deep Learning, Face Analysis, Synthesis, Biometrics, Low-level Vision, Audio-Visual Modeling, Image Forensic.

EDUCATION

Michigan State University, MI, USA

Ph.D. Candidate in Computer Science, May 2016 - May. 2021 (Expected)
- Dissertation Title: "Face Anti-Spoofing: Detection, Generalization, and Visualization"
- Advisor: Dr. Xiaoming Liu
- Thesis committee: Xiaoming Liu (chair), Anil Jain, Arun Ross, Daniel Morris
- GPA: 3.67/4

The Ohio State University, OH, USA

M.S. in Computer Science, Sept. 2014 - Apr. 2016
- Research Title: "Global and Local Fitting of Facial Landmarks and Action Units (AUs)"
- Advisor: Dr. Aleix Martinez
- GPA: 3.88/4

University of Electronic Science and Technology of China, Sichuan, China

B.E. in Communication Engineering, Sept. 2010 - Apr. 2014
- Dissertation Title: "Image Inpainting"
- Advisor: Dr. Chang Shu
- GPA: 3.92/4

WORKING EXPERIENCES

Computer Vision Intern   **May 2020 - Aug. 2020**
Bosch Research, Sunnyvale, CA
Mentor: Xinyu Huang
Research topic: Face Shadow Removal/Relighting

AI Research Intern   **May 2019 - Aug. 2019**
Apple Inc., Cupertino, CA
Mentor: Barry Theobald, Nicholas Apostoloff
Research topic: Audio-visual Modeling

Research Assistant   **May 2016 - Now**
Michigan State University, East Lansing, MI

RESEARCH HIGHLIGHTS

In the area of face anti-spoofing, I lead the R&D at our team, publish **7** papers, **1** under review, release **2** databases, file **1** patent, organize **2** half-day tutorials and **1** full-day demo. The papers receive overall >**450** citations, the databases are distributed to >**700** research groups, and our code

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receive $\sim$**300** stars & **90** forks on GitHub. In U.S. government-organized independent evaluation, our face anti-spoofing solution can achieve **98.4%** TDR at **0.2%** FDR and **1.0** AUC. Our research of face anti-spoofing is covered by MSUToday[News]. Here are some examples of our face anti-spoofing systems [Video].

PUBLICATIONS   I have >550 citations according to **Google Scholar**, and my h-index is 6. (* 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 Commputer 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 Commputer 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

- ECCV 2020 Outstanding Reviewer Award (215 selected from 2830 reviewers)   **2020**
- College of Engineering Dissertation Completion Fellowship, MSU   **2020**
- CVPR 2019 Best Paper Finalist (45 selected from 1294 accepted papers)   **2019**
- Honorable Mention, Engineering Graduate Research Symposium, MSU   **2018**
- College of Engineering Distinguished Fellowship, MSU   **2016**
- Best Bachelor Thesis Award, UESTC   **2014**
- First Rank, People′s Scholarship for Excellent Student, China   **2013**
- Second Rank, People′s Scholarship for Excellent Student, China   **2012**
- Research fund from Institute of Electronic Science and Technology, UESTC   **2012**
- Research fund from Undergraduate Innovation Foundation, UESTC   **2011**
- First Rank, People´s Scholarship for Excellent University Student, China   **2011**

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 Commputer 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, 2016)

TALKS

- Invited talk, Sichuan University, China.   **Jan. 2020**
  "Face Anti-Spoofing: Detect, Visualize, and Generalize"

- Invited talk, UESTC, 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, LaTeX, Lisp
- Operating Systems: Linux, MacOS, Windows
- Signal Processing: Matlab
- Computer Vision Library: OpenCV
- Deep Learning: Tensorflow, PyTorch, MatConvNet, Caffe.