Yaojie Liu

CONTACT INFORMATION

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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, 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

RESEARCH HIGHLIGHTS

In the area of face anti-spoofing, I lead the R&D at our team, publish **7** papers, release **2** databases, file **1** patent, organize **2** half-day tutorials and **1** full-day demo. The papers receive overall >**400** citations, the databases are distributed to >**600** research groups, and our code receive **278** stars & **86** 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 >500 citations according to **Google Scholar**, and my h-index is 6. (* denotes equal contribution)

Conference Papers:

1. **Y. Liu**, J. Stehouwer, X. Liu, "On Disentangling Spoof Traces for Generic Face Anti-Spoofing," Proc. European Conference of Commputer Vision (**ECCV**'20), 2020. (26% Acceptance Rate) **[PDF]** **[Code]** **[Short Video]** **[Long Video]**

2. J. Stehouwer, A. Jourabloo, **Y. Liu**, X. Liu, "Noise Modeling, Synthesis and Classification for Generic Object Anti-Spoofing," IEEE Computer Vision and Pattern Recognition (**CVPR**′20), 2020. (25% Acceptance Rate) **[PDF] [Code] [Database] [Short Video]**

3. **Y. Liu**, J. Stehouwer, A. Jourabloo, X. Liu, "Deep Tree Learning for Zero-shot Face Anti-spoofing," IEEE Computer Vision and Pattern Recognition (**CVPR**′19), 2019. (**Oral, Best Paper Finalist, 5.6% Acceptance Rate.**) **[PDF] [Code] [Database] [Poster]**

4. **Y. Liu***, A. Jourabloo*, X. Liu, "Face De-Spoofing: Anti-Spoofing via Noise Modeling," Proc. European Conference of Commputer Vision (**ECCV**′18), 2018. (31.8% Acceptance Rate) **[PDF] [Code] [Poster]**

5. **Y. Liu***, A. Jourabloo*, X. Liu, "Learning Deep Models for Face Anti-Spoofing: Binary or Auxiliary Supervision," IEEE Computer Vision and Pattern Recognition (**CVPR**′18), 2018. (30% Acceptance Rate) **[PDF] [Database] [Poster]**

6. **Y. Liu**, A. Jourabloo, W. Ren, X. Liu, "Dense Face Alignment," International Conference on Computer Vision (**ICCVW**′17) Workshop on Analysis and Modeling of Faces and Gestures (AMFG), 2017. **[PDF] [Code] [Poster]**

7. **Y. Liu***, Y. Atoum*, A. Jourabloo*, X. Liu, "Face Anti-Spoofing Using Patch and Depth-Based CNNs," International Joint Conference on Biometrics (**IJCB**′17), 2017. **[PDF] [Poster]**

8. R. Zhao, Y. Wang, C.F. Benitez-Quiroz, **Y. 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**′16), 2016. **[PDF]**

9. **Y. Liu**, C. Shu, "A Comparison of Image Inpainting Techniques." International Conference on Graphic and Image Processing (ICGIP), 2015. **[Link]**

Journal Papers:

10. **Y. Liu**, X. Liu, "Exploring Physical-Guided Spoof Trace Disentangling for Generic Face Anti-Spoofing" under review in IEEE Transaction on Pattern Analysis and Machine Intelligence (PAMI), 2020.
11. C. Shu, **Y. 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]**
12. **Y. Liu**, C. Shu, "Dynamic Gesture Localization and Recognition Algorithm Based on Skeletonization" Electronic Science and Technology, Vol. 3, pp. 005, 2014. (in Chinese) **[Link]**

Book Chapters:

13. **Y. Liu**, J. Stehouwer, A. Jourabloo, X. Liu, "Presentation Attack Detection for Face in Mobile Phones" Selfie Biometrics, Ajita Rattani, Reza Derakhahani, and Arun Ross, Eds, Springer-Verlag, 2019. **[PDF]**

Working Experiences

Computer Vision Intern — **May 2020 - Aug. 2020**
Bosch Research, Sunnyvale, CA

AI Research Intern **May 2019 - Aug. 2019**
Research topic: Audio-visual Modeling
Apple Inc., Cupertino, CA

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

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
- Half-day Tutorial: "Face Anti-Spoofing: Past, Present and Future", International Conference on Biometrics: Theory Applications and Systems (BTAS), 2019

Conference Reviewer
CVPR′19-21, ICCV′19, ECCV′20, NeurIPS′20, AAAI′20-21, WACV′21, ACCV′20, BTAS′18, ICB′19, ICME′20, PRCV′19-20

Journal Reviewer
TPAMI, TIP, TIFS, CVIU, Neurocomputing, TOMM, JCST, JEI, Image and Vision Computing, IET Computer Vision, IEEE Access, TBIOM

Talks

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

Honors and Awards

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

PATENTS

Y. Liu, A. Jourabloo, X. Liu, "Improved Spoof Detection for Facial Recognition," U.S. Serial No. 62/626,486, filed on Feb 05, 2018.

DEMOS

"Real-time Face Anti-spoofing System" at CVPR'18. **[Link]** **Jun. 2018**

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 (1.x, 2.0), PyTorch, MatConvNet, Caffe.