Andrew Hou

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EDUCATION

2019 – 2024 *Michigan State University*
PhD Student in Computer Vision
Advisor: Dr. Xiaoming Liu
Research Areas: Face Relighting, 3D Face Modeling
Graduate GPA: 3.95/4.0

2014 – 2018 *Brown University*
Sc.B. with Honors in Applied Mathematics and Computer Science
Honors Thesis: *Light Field Super Resolution Using Convolutional Neural Networks*
Advisor: Dr. James Tompkin
GPA: 3.58/4.0 (Major GPA: 3.64/4.0)

2013 – 2014 *Clarkson University*
The Clarkson School Early College Entrance Program
Major: Electrical Engineering and Computer Science
GPA: 3.79/4.0 (Major GPA: 3.74/4.0)

PUBLICATIONS

1. **Andrew Hou**, Feng Liu, Zhiyuan Ren, Michel Sarkis, Ning Bi, Yiying Tong, and Xiaoming Liu, "INFAMOUS-NeRF: ImproviNg FAce MOdeling Using Semantically-Aligned Hypernetworks with Neural Radiance Fields," In submission to IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2024. [PDF]
2. **Andrew Hou**, Zhixin Shu, Xuaner Zhang, He Zhang, Yannick Hold-Geoffroy, Jae Shin Yoon, and Xiaoming Liu, "COMPOSE: Comprehensive Portrait Shadow Editing," In submission to IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2024. [PDF]
3. Jingwen Shi, Tian Xie, Guan-Hua Tu, Chunyi Peng, Chi-Yu Li, **Andrew Hou**, Sihan Wang, Yiwen Hu, Xinyu Lei, Min-Yue Chen, Li Xiao, and Xiaoming Liu. "When Good Turns Evil: Encrypted 5G/4G Voice Calls Can Leak Your Identities," IEEE Conference on Communications and Network Security (CNS), 2023. [PDF]
4. Yaojie Liu*, **Andrew Hou***, Xinyu Huang, Liu Ren, and Xiaoming Liu, "Blind Removal of Facial Foreign Shadows," British Machine Vision Conference (BMVC), 2022. (* denotes equal contribution) [PDF]
5. **Andrew Hou**, Michel Sarkis, Ning Bi, Yiying Tong, and Xiaoming Liu, "Face Relighting with Geometrically Consistent Shadows," IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2022. [PDF]
6. **Andrew Hou**, Ze Zhang, Michel Sarkis, Ning Bi, Yiying Tong, and Xiaoming Liu, "Towards High Fidelity Face Relighting with Realistic Shadows," IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2021. [PDF]
7. Jiaju Huang, Daqing Hou, Stephanie Schuckers, and **Zhenhao Hou**, "Effect of data size on performance of free-text keystroke authentication," IEEE International Conference on Identity, Security and Behavior Analysis (ISBA 2015), Hong Kong, 2015, pp. 1-7. [PDF]

PROFESSIONAL EXPERIENCE

06/2019 - Present **Computer Vision PhD Student at Michigan State University (Advisor: Dr. Xiaoming Liu)**
- Collaborated with Bosch on facial foreign shadow removal (paper accepted to BMVC 2022).
- Worked on face relighting projects with Qualcomm with an emphasis on hard shadow modeling. Two face relighting papers were accepted at CVPR 2021 and CVPR 2022. Also recently worked with Qualcomm on improving NeRF's representation power for multi-subject 3D face modeling.

05/2023 - 09/2023 **Research Intern at Adobe (Advisors: Drs. Zhixin Shu, Cecilia Zhang, He Zhang, Yannick Hold-Geoffroy, and Jae Shin Yoon)**
- Worked on controllable portrait shadow editing that cleanly modifies only shadow attributes (intensity, shape, position) while preserving the other light attributes of the image, submitted to CVPR 2024.

06/2022 - 08/2022 **Research Intern at Bosch (Advisors: Drs. Xinyu Huang, Liu Ren, Yuliang Guo, Ruoyu Wang)**

- Worked on improving cross-domain monocular 3D object detection performance.

06/2021 - 08/2021 **Research Intern at Bosch (Advisors: Drs. Xinyu Huang, Liu Ren, and Sharath Gopal)**

- Produced a model for facial foreign shadow removal given a single image and managed to achieve SoTA shadow removal/segmentation performance. Our work was accepted at BMVC 2022.

06/2018-05/2019 **Vision/Robotics Research Assistant (Advisors: Drs. Stefanie Tellex and James Tompkin)**

- Created VR displays constructed from light field images to enable robot teleoperation.
- Implemented state of the art view synthesis algorithm for light field images: "Soft 3D Reconstruction for View Synthesis" (Penner & Zhang, 2017).
- Wrote Unity shaders for real time view synthesis in VR that follows eye poses from the HTC Vive.

06/2017-05/2018 **Computer Vision (Light Fields) Research Assistant (Advisor: Dr. James Tompkin)**

- Implemented a fully convolutional network for angular super resolution of sparse light fields.
- Wrote an honors thesis for the project titled *Light Field Super Resolution Using Convolutional Neural Networks.*

06/2015-06/2016 **Computer Vision/HCI Research Assistant (Advisors: Drs. James Hays and Geoffrey Sun)**

- Designed a user interface for a "human-in-the-loop" approach to solving image restoration.

05/2014-08/2014 **Keystroke Biometrics Research Assistant (Advisor: Dr. Stephanie Schuckers)**

- Investigated the effect of the amount of keystroke data collected from a user on the performance of keystroke authentication algorithms.
- Implemented the "Zone of Acceptance" algorithm for keystroke authentication.
- Published results in ISBA 2015 and presented at the SURE Conference at Clarkson University.

TECHNICAL SKILLS

1. Languages: Python, Matlab, Java, C++, C#, C, R, HTML, CSS, Javascript, JQuery, PHP, Bash, Scala, Racket, OCaml
2. Deep Learning Frameworks: PyTorch, TensorFlow
3. Other: Linux, MacOS, Windows, Microsoft Office, LaTeX (Overleaf), Github, Unity, ROS

AWARDS & HONORS

08/2023	Data and Research Translation Award (2nd place, sponsored by Jackson, MSU EGRS)
08/2023	Best Poster Award (MSU Engineering Graduate Research Symposium)
04/2022	Best Poster Award (MSU Engineering Graduate Research Symposium, AI/Big Data Category)
04/2019	University Distinguished Fellowship (20 out of 500 incoming MSU PhD students)
05/2013	Presidential Scholarship (5 out of 80 Clarkson School students)

TEACHING EXPERIENCE

09/2020 – 12/2021	Graduate Computer Vision Assignment Grader for Fall 2020, 2021, and 2022 (MSU, CSE 803)
09/2017 – 12/2018	Deep Learning Teaching Assistant for Fall 2017 and Fall 2018 (Brown, CSCI 1470)
01/2018 – 05/2018	Machine Learning Teaching Assistant (Brown, CSCI 1420)
09/2017 – 12/2017	Computer Vision Teaching Assistant (Brown, CSCI 1430)
06/2017 – 08/2017	Applied Ordinary Differential Equations Teaching Assistant (Brown, APMA 0350)

SERVICES & ACTIVITIES

1. Grant proposal editor and assistant for "Physics-driven Modeling and Learning for Person Recognition at a Distance and Altitude", which is a 4 year, $10.6 million grant from IARPA. Helped produce figures and tables, organize and improve the reference section, and proofread the entire proposal.
2. Webmaster for the Computer Vision Lab under Dr. Xiaoming Liu. I update new publications, datasets, and other relevant information at http://cvlab.cse.msu.edu/
3. Reviewer for CVPR 2022-2024, ICCV 2023, SIGGRAPH 2023, BMVC 2022, TIP, TVCG, PR Letters.
4. Mentored students: Anh Dao (MSU undergrad, face relighting), ZiAng Gu (MSU undergrad, NeRF/3D Vision)

LANGUAGES & ADDITIONAL SKILLS

1. (English, Chinese)-Native/Bilingual Proficiency; (Japanese, Spanish, Latin)-Elementary Proficiency
2. Effective presenter with strong public speaking and communication skills.