Andrew Hou

(315) 262-5708 * andrewhou333@gmail.com * Google Scholar * Github * LinkedIn * Website

EDUCATION

08/2019 – 05/2024   *Michigan State University*
PhD Student in Computer Vision
Advisor: Dr. Xiaoming Liu
Research Areas: Face Relighting, Face Reconstruction, Shadow Synthesis/Removal
Graduate GPA: 3.95/4.0

09/2014 – 05/2018   *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)

08/2013-05/2014   *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**, 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.

2. **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.

3. 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.

PROFESSIONAL EXPERIENCE

06/2019 - Present   **Computer Vision PhD Student at Michigan State University (Advisor: Dr. Xiaoming Liu)**
- PhD student in the Computer Vision Lab advised by Dr. Xiaoming Liu.
- Collaborated with Bosch to create a state-of-the-art model for foreign shadow removal and segmentation on face images. Also worked on improving monocular 3D object detection.
- 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.
- Designed multi-resolution 3DMM-based models for single image 3D face reconstruction.
- Designed multi-resolution deep learning models for single image generic object reconstruction, particularly category agnostic models for multiple object categories.

06/2022 - 08/2022   **Research Intern at Bosch (Advisors: Drs. Xinyu Huang, Liu Ren, Yuliang Guo, Ruoyu Wang)**
- Worked on improving 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. My model managed to achieve state-of-the-art shadow removal and shadow segmentation performance.

06/2018-05/2019   **Vision/Robotics Research Assistant (Advisors: Drs. Stefanie Tellex and James Tompkin)**
- Created virtual reality displays constructed from light field images of different scenes to enable robot teleoperation within the scenes.

- 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*.

06/2016-12/2017   **NLP Research Assistant (Advisors: Drs. Eugene Charniak and Chris Tanner)**
- Implemented LSTM models in Tensorflow for event coreference resolution.

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.
- Presented my work at the SURE Conference at Clarkson University.
- Published results in ISBA 2015.

TECHNICAL SKILLS

1. Primary Languages: Python, Matlab
2. Deep Learning Frameworks: Pytorch, Tensorflow
3. Other Languages: Java, C++, C#, C, R, Bash, Scala, Racket, OCaml
4. Web Programming: HTML, CSS, Javascript, JQuery, PHP
5. Experience working with Linux, MacOS, and Windows
6. Microsoft Office, LaTeX (Overleaf), Github
7. Other skills: Unity (including writing shaders), ROS (including SLAM gmapping)

AWARDS & HONORS

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 and Fall 2021 (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, BMVC 2022, TIP, PR Letters.

LANGUAGES & ADDITIONAL SKILLS

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