Yi Hua

huayi@cmu.edu (+1)832-691-5558 https://github.com/Hawaiii

My primary research interest is in computational photography. I build tools that help people image the world, by designing cameras with novel abilities and developing efficient algorithms for seeing with them.

Education

Carnegie Mellon University
Ph.D., Electrical & Computer Engineering, 2022 (expected).
Topics: Computational Photography, Computational Imaging, Lensless Imaging

M.S., Computer Vision, Dec. 2016.

Rice University
B.S., Computer Science; minor in Mathematics, May 2015.

Awards

Carnegie Institute of Technology Dean's Fellow, 2017

People's Choice Award at HackRice, 2015

Publications

Yi Hua, Shigeki Nakamura, M. Salman Asif and Aswin C. Sankaranarayanan,
SweepCam — Depth-aware Lensless Imaging using Programmable Masks,
in IEEE Trans. Pattern Analysis and Machine Intelligence (TPAMI) / Special Issue of ICCP 2020, volume 42, pp. 1606–1617, 2020.

Yucheng Zheng, Yi Hua, Aswin C. Sankaranarayanan and M. Salman Asif,
A Simple Framework for 3D Lensless Imaging with Programmable Masks,
in IEEE Intl. Conf. Computer Vision (ICCV), 2021.

Experiences

Carnegie Mellon University Image Science Lab, 2016-present
Graduate student researcher, advisor: Prof. Aswin C. Sankaranarayanan
- Physics-based differential rendering for 3D lensless imaging
- Programmable-mask lensless imager for faster and better 3D imaging
- Flexible lensless imager with on the sphere and curved surfaces
- Computational enhancement to acousto-optic imaging

Google Daydream, summer 2018
Software engineering intern
- Developed cross-spectral feature matching network for quality depth estimation of specular scenes

Meta Reality Labs (formerly Facebook Reality Labs), 2016
Capstone project
- Built a robotic calibration system for camera and IMU calibration

Apple Special Project Group, summer 2016
Software engineering intern

Rice University Computer Vision Lab, 2014
Student researcher
• Set up, calibrated, and programmed a multi-camera system for accurate human detection indoors

Heidelberg Collaboratory for Image Processing, summer 2013
DAAD RISE research intern (German Academic Exchange Service Research Internships in Science & Engineering)
• Created tools for 2D to 3D film conversion by classifying depth edges using random forests, implemented with C++ and OpenCV

Teaching

Electrical & Computer Engineering, Carnegie Mellon University
• Teaching Assistant, Mathematical Foundations of Electrical Engineering, 2019
• Teaching Assistant, Signal and Systems , 2018
• Teaching Assistant, Image and Video Processing, 2018

Computer Science, Rice University
• Teaching Assistant, Parallel Computing, 2015
• Teaching Assistant, Introduction to Program Design, 2014
• Teaching Assistant, Algorithmic Thinking, 2014

Service

Review for journals and conferences
• IEEE Transactions on Computational Imaging, Optics Express
• CVPR 2022, ECCV 2022

Projects

3D from Shadows Scanner, 2015
• Turned a webcam & spoon into a 3D scanner that scans objects with shadow and reconstructs point cloud

Peel: Style Transfer App on Android , 2015
• An app that let you ”peel” a color filter from a photo you like and apply it to your photo

We put food on your plate: Augmented Reality App on Android , 2014
• An app that augments empty plates detected from camera with food

Skills

Programming
• Python, C++, MATLAB, Java; PyTorch, Tensorflow, OpenCV, ROS

Fabrication
• SolidWorks, laser cutting, 3D printing, crochet

Artistic
• Watercolor painting, animated illustration (hawaiiiwatercolor.tumblr.com)