

# Qichen Fu

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## EDUCATION

### Carnegie Mellon University, School of Computer Science

Master of Science in Robotics; GPA: 4.20/4.33

Teaching Assistant: Visual Learning and Recognition (2022), Computer Vision (2021)

Pittsburgh, PA

Aug. 2020 - Aug. 2022

### University of Michigan - Ann Arbor, College of Engineering

Bachelor of Science in Computer Science (dual degree with SJTU); GPA: 4.00/4.00

Instructional Aide: Computer Vision (2019, 2020)

Ann Arbor, MI

Aug. 2018 - Apr. 2020

### Shanghai Jiao Tong University

Bachelor of Science in Electrical and Computer Engineering (dual degree with UM); GPA: 3.73/4.00

Shanghai, China

Sept. 2016 - Aug. 2020

## RESEARCH INTERESTS

**Computer Vision:** Human Activity Understanding, 3D Hands and Objects Reconstruction, Egocentric Video

**Machine Learning:** Self-supervised Learning, Multimodal Machine Learning, Reinforcement Learning

## PUBLICATIONS

### Sequential Voting with Relational Box Fields for Active Object Detection

Qichen Fu, Xingyu Liu, Kris M. Kitani

CVPR 2022 (under review)

### Ego4D: Around the World in 3,000 Hours of Egocentric Video

Kristen Grauman, ..., Qichen Fu, ..., Jitendra Malik

CVPR 2022 (under review)

### EgoAugment: CMU-KLAB Submission to the EPIC-Kitchens Action Recognition 2021 Challenge

Xuhua Huang, Ye Yuan, Xingyu Liu, Qichen Fu, Kris M. Kitani

CVPR 2021 Workshop

## RESEARCH EXPERIENCE

### Unsupervised Joint Hand-Object Poses Estimation

Research Assistant in KLab. Advisor: Prof. Kris Kitani

Pittsburgh, PA

Sept. 2021 - Present

- Proposed a unified approach for joint hand-object 3D pose estimation from multiview video without 3D annotations

### Sequential Voting with Relational Box Fields for Active Object Detection

Research Assistant in KLab. Advisor: Prof. Kris Kitani

Pittsburgh, PA

Feb. 2021 - Sept. 2021

- Proposed a pixel-wise voting function with Relational Box Field to leverage each pixel as evidence to robustly predict the bounding box of the active object, despite under occlusions
- Evaluated on 100DOH and MECCANO datasets, improving AP50 over the state of the art by 8% and 30% respectively

### EgoAugment for Human Activity Recognition

Research Assistant in KLab. Advisor: Prof. Kris Kitani

Pittsburgh, PA

Feb. 2021 - June 2021

- Proposed a new video feature extractor combining transformer and SlowFast network for egocentric activity recognition
- Ranked #6 on the leaderboard of EPIC-KITCHENS Action Recognition 2021 Challenge

### Ego4D: Around the World in 3,000 Hours of Egocentric Video

Research Assistant in KLab. Advisor: Prof. Kris Kitani

Pittsburgh, PA

Oct. 2020 - Nov. 2021

- Built a semi-automatic video de-identification pipeline utilizing brighter Redact and SimaMask
- Developed object of change detection benchmark using DETR, CenterNet, CornerNet, and Faster-RCNN
- Designed the data release, submission schema, and evaluation scripts for public Ego4D object of change detection challenge

### Object Articulation Detection

Research Assistant in Fouhey AI Lab (FAIL). Advisor: Prof. David Fouhey

Ann Arbor, MI

May 2019 - Sept. 2019

- Proposed an unsupervised articulated object detection framework using region proposal network and optical flow
- Trained a 3D ResNet for object articulation type classification, achieving an accuracy of 62.8%

### MRI Reconstruction with Deep Learning

Research Assistant in Fessler Research Group. Advisor: Prof. Jeffrey A. Fessler

Ann Arbor, MI

May 2018 - Nov. 2019

- Defined a set of convolution, normalization, activation, and pooling layers for complex-valued input
- Proposed a complex-valued U-Net for MRI reconstruction, reducing parameters by 50% compared to vanilla U-Net
- Integrated complex-valued U-Net network to BCD-Net with end-to-end training, improving the learning speed by over 36%

## HONORS

**University of Michigan:** Jackson and Muriel Lum Scholarship, James B. Angell Scholar, University Honors

**Shanghai Jiao Tong University:** National Scholarship, Undergraduate Excellent Scholarship, MiYuan Public Welfare Scholarship