Qichen Fu

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Education

Carnegie Mellon University, School of Computer Science — Pittsburgh, PA
Master of Science in Robotics; GPA: 4.17/4.33 — *Aug. 2020 - Aug. 2022*
Teaching Assistant: Computer Vision (2021)

University of Michigan - Ann Arbor, College of Engineering — Ann Arbor, MI
Bachelor of Science in Computer Science (dual degree with SJTU); GPA: 4.00/4.00 — *Aug. 2018 - Apr. 2020*
Instructional Aide: Computer Vision (2019, 2020)

Shanghai Jiao Tong University — Shanghai, China
Bachelor of Science in Electrical and Computer Engineering (dual degree with UM); GPA: 3.73/4.00 — *Sept. 2016 - Aug. 2020*

Research Interests

Computer Vision: Human Activity Understanding; 3D Hand-Object Joint Reconstruction; 3D Object Reconstruction; Egocentric Video
Machine Learning: Unsupervised Learning; Multimodal Machine Learning; Reinforcement Learning

Publications

Sequential Voting with Relational Box Fields for Active Object Detection — CVPR 2022 (under review)
***Qichen Fu**, Xingyu Liu, Kris M. Kitani*

Ego4D: Around the World in 3,000 Hours of Egocentric Video — CVPR 2022 (under review)
*Kristen Grauman, ..., **Qichen Fu**, ..., Jitendra Malik*

EgoAugment: CMU-KLAB Submission to the EPIC-Kitchens Action Recognition 2021 Challenge — CVPR 2021 Workshop
*Xuhua Huang, Ye Yuan, Xingyu Liu, **Qichen Fu**, Kris M. Kitani*

Research Experience

Unsupervised Joint Hand-Object Poses Estimation — Pittsburgh, PA
Research Assistant in KLab. ***Advisor:*** *Prof. Kris Kitani* — *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 — Pittsburgh, PA
Research Assistant in KLab. ***Advisor:*** *Prof. Kris Kitani* — *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 — Pittsburgh, PA
Research Assistant in KLab. ***Advisor:*** *Prof. Kris Kitani* — *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 — Pittsburgh, PA
Research Assistant in KLab. ***Advisor:*** *Prof. Kris Kitani* — *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 — Ann Arbor, MI
Research Assistant in Fouhey AI Lab (FAIL). ***Advisor:*** *Prof. David Fouhey* — *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 — Ann Arbor, MI
Research Assistant in Fessler Research Group. ***Advisor:*** *Prof. Jeffrey A. Fessler* — *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