

Daohan “Fred” Lu

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Seeking Internship in Computer Vision

Education

Carnegie Mellon University	Pittsburgh, PA
<i>School of Computer Science</i>	12/2022
• Master of Science in Computer Vision	
New York University	New York, NY
<i>College of Arts and Science</i>	05/2021
• Bachelor of Arts in Economics and Computer Science	
• GPA: 3.86/4.00	

Work and Research Experience

NYU CILVR Lab (wp.nyu.edu/cilvr/)	Advisor Prof. Rob Fergus	New York, NY
<i>Research Assistant</i>		05/2021 - Present
<ul style="list-style-type: none">• Researched Machine Common Sense (MCS) [1, 2]: designed predictive models (VGG+LSTM) that detect and localize implausible physics events by comparing observations with predictions learned from plausible physics events. (Github)• The predictive models generated interpretable "baselines" that estimated where and how strongly physics inconsistencies occur, which helped the MCS psychology team understand how predictive models detect inconsistencies.• Achieved 84% True Positive and 73% True Negative rates on the Gravity physics test set.		
NYU MMVC Lab (mmvc.engineering.nyu.edu/)	Advisor Prof. Yi Fang	New York, NY
<i>Research Assistant</i>		10/2019 - 08/2020
<ul style="list-style-type: none">• Innovated lightweight MLPs dynamic initialized by a PointNet for 2x faster training and fine-tuning on 3D shape correspondence tasks while retaining the same level of accuracy compared to state of the art. (Paper)• Designed MobileNet-SSD based models that provide real-time (>10/s) audio feedback to help blind users maintain social distance (Paper) and help blind users complete collaborative hand gestures (Paper, Talk).• Employed metric learning to improve few-shot segmentation performance on remote sensing images. (Paper)• Created <i>Weakly Supervised Point-to-tell</i> (GitHub), which trained a weakly-supervised (categorical labels only) Resnet model to localize objects being pointed to by a blind person on a synthetic dataset.		
Avigilon, Motorola Solutions (avigilon.com/)		Somerville, MA
<i>Research Engineer Intern</i>		06/2019 - 08/2019
<ul style="list-style-type: none">• Trained and tested a specialized LeNet model that classified human false-positive detections from the camera's security cameras. Wrote C++ code to deploy the model on camera with temporal false-positive suppression logic, reducing human false-positive detections by ~40% on proprietary test datasets.• Modeled enhanced versions of the Kalman Filter (UKF, EKF) with C++ and Python to evaluate their potential to improve object tracking and detection when integrated into the security cameras.		

Research Papers

- Lu, Daohan, and Yi Fang. *Audi-Exchange: AI-Guided Hand-Based Actions to Assist Human-Human Interactions for the Blind and the Visually Impaired*. Ninth International Workshop on Assistive Computer Vision and Robotics (ACVR). 2021. [View Paper](#), [Talk@ICCV Workshop](#)
- Shrestha, Samridha, and Daohan Lu, et al. "Active Crowd Analysis for Pandemic Risk Mitigation for Blind or Visually Impaired Persons." Eighth International Workshop on Assistive Computer Vision and Robotics (ACVR). 2020. [View Paper](#)
- Lu, Daohan, and Yi Fang. "Meta Deformation Network: Meta Functionals for Shape Correspondence." arXiv preprint arXiv:2006.14758 (2020). [View Paper](#)