

# Daohan “Fred” Lu

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Seeking Internship in Computer Vision

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## Education

Carnegie Mellon University  
*School of Computer Science*

Pittsburgh, PA  
12/2022

- Master of Science in Computer Vision

New York University

New York, NY

*College of Arts and Science*

05/2021

- Bachelor of Arts in Economics and Computer Science
  - GPA: 3.86/4.00
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## Work and Research Experience

**NYU CILVR Lab** ([wp.nyu.edu/cilvr/](http://wp.nyu.edu/cilvr/)) Advisor Prof. Rob Fergus

New York, NY

*Research Assistant*

05/2021 - Present

- 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/](http://mmvc.engineering.nyu.edu/)) Advisor Prof. Yi Fang

New York, NY

*Research Assistant*

10/2019 - 08/2020

- 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 \[3\]](#))
- Designed MobileNet-SSD based models that provide real-time (>10/s) audio feedback to help the blind maintain social distance ([Paper \[2\]](#)) and help the blind with collaborative hand gestures ([Paper \[1\]](#), [Talk](#)).
- Created *Weakly Supervised Point-to-tell* ([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/](http://avigilon.com/))

Somerville, MA

*Research Engineer Intern*

06/2019 - 08/2019

- 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.
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## Research Papers

- [1] 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](#)
- [2] 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](#)
- [3] Lu, Daohan, and Yi Fang. "Meta Deformation Network: Meta Functionals for Shape Correspondence." arXiv preprint arXiv:2006.14758 (2020). [View Paper](#)