

# Daohan “Fred” Lu

New York, NY · [dl3957@nyu.edu](mailto:dl3957@nyu.edu) · (LinkedIn) [www.linkedin.com/in/daohanlu](http://www.linkedin.com/in/daohanlu)  
(Github) [github.com/daohanlu](https://github.com/daohanlu) · (Website) [daohanlu.github.io/](http://daohanlu.github.io/)

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## Education

New York University <i>Graduate School of Arts and Science</i>	New York, NY 05/2028 (Expected)
<ul style="list-style-type: none"><li>• Doctor of Philosophy in Computer Science</li></ul>	
Carnegie Mellon University <i>School of Computer Science</i>	Pittsburgh, PA 12/2022
<ul style="list-style-type: none"><li>• Master of Science in Computer Vision</li></ul>	QPA: 3.97
New York University <i>College of Arts and Science</i>	New York, NY 05/2021
<ul style="list-style-type: none"><li>• Bachelor of Arts in Economics and Computer Science</li></ul>	GPA: 3.86/4.00 <i>magna cum laude</i>

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## Work and Research Experience

<b>PathAI</b> ( <a href="http://pathai.com">pathai.com</a> ) <i>Machine Learning Engineer Intern</i>	Boston, MA 06/2022 - 09/2022
<ul style="list-style-type: none"><li>• Researching methods to measure and reduce the impact of catastrophic forgetting when fine-tuning models on a smaller or differing medical imaging dataset.</li></ul>	
<b>Generative Intelligence Lab</b> ( <a href="http://cs.cmu.edu/~junyanz/">cs.cmu.edu/~junyanz/</a> ) <i>Research Assistant</i>	Pittsburgh, PA 02/2022 - 07/2023
<ul style="list-style-type: none"><li>• Created a content-based search algorithm that lets users find image generative models with words or pictures, which is deployed to a web-based user interface (<a href="#">Paper [1]</a>, <a href="#">Website</a>).</li></ul>	
<b>NYU CILVR Lab</b> ( <a href="http://wp.nyu.edu/cilvr/">wp.nyu.edu/cilvr/</a> ) <i>Research Assistant</i>	New York, NY 05/2021 - 08/2021
<ul style="list-style-type: none"><li>• Researched Machine Common Sense (<a href="#">MCS</a>): designed generative models (VGG+LSTM) that detect and localize implausible physics in videos by learning to generate plausible frames. (<a href="#">Github</a>)</li><li>• Achieved 84% True Positive and 73% True Negative rates on the Gravity physics test set.</li></ul>	
<b>NYU MMVC Lab</b> ( <a href="http://mmvc.engineering.nyu.edu/">mmvc.engineering.nyu.edu/</a> ) <i>Research Assistant</i>	New York, NY 10/2019 - 08/2020
<ul style="list-style-type: none"><li>• 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. (<a href="#">Paper [4]</a>)</li><li>• Designed MobileNet-SSD based models that provide real-time (&gt;10/s) audio feedback to help the blind maintain social distance (<a href="#">Paper [3]</a>) and help the blind with collaborative hand gestures (<a href="#">Paper [2]</a>).</li></ul>	
<b>Avigilon, Motorola Solutions</b> ( <a href="http://avigilon.com/">avigilon.com/</a> ) <i>Research Engineer Intern</i>	Somerville, MA 06/2019 - 08/2019
<ul style="list-style-type: none"><li>• Trained and tested a specialized LeNet model that classified human false-positive detections from the camera's security cameras, reducing human false-positive detections by ~40% on proprietary test datasets.</li><li>• 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.</li></ul>	

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## Selected Papers

- [1] Lu, Wang, Kumari, Agarwal, et al. "Content-Based Search for Deep Generative Models." arXiv preprint arXiv:2210.03116 (2022). [arXiv](#), [YouTube](#)
- [2] 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), ICCV Workshops. 2021. [Paper](#)
- [3] Shrestha, Samridha, and Daohan Lu, et al. "Active Crowd Analysis for Pandemic Risk Mitigation for Blind or Visually Impaired Persons." Eighth International Workshop on ACVR, ECCV Workshops. 2020. [Paper](#)
- [4] Lu, Daohan, and Yi Fang. "Meta Deformation Network: Meta Functionals for Shape Correspondence." arXiv preprint arXiv:2006.14758 (2020). [arXiv](#)