Shao-Yuan Lo

Email: sylo@jhu.edu
Phone: 1-443-808-7270
https://shaoyuanlo.github.io

Education

Johns Hopkins University (JHU) — Baltimore, MD
Ph.D. in Electrical and Computer Engineering — 2019 –2023 (expected)
- Advisor: Prof. Vishal M. Patel

National Chiao Tung University (NCTU) — Hsinchu, Taiwan
M.S. in Electronics Engineering — 2017 –2019
- Advisor: Prof. Hsueh-Ming Hang

B.S. in EECS Undergraduate Honors Program — 2013 –2017

University of Illinois at Urbana-Champaign (UIUC) — Champaign, IL
Exchange Program in Electrical and Computer Engineering — 2016

Industry Experience

Amazon Go — Seattle, WA
Applied Scientist Intern — May 2022 –Aug. 2022
- Mentors: Poojan Oza, Sumanth Chennupati, and Alejandro Galindo

Amazon Lab126 — Bellevue, WA
Applied Scientist Intern — May 2021 –Aug. 2021
- Mentors: Wei Wang, Jim Thomas, Jingjing Zheng, and Cheng-Hao Kuo

Research Areas

Adversarial machine learning [6-10, 12-13], domain adaptation [11, 14], semantic segmentation [1-5, 14], depth estimation [11], novelty detection [12], lane detection [1, 3], frequency domain computer vision [4], medical image analysis [13]

Publications

[14] **Shao-Yuan Lo**, Poojan Oza, Sumanth Chennupati, Alejandro Galindo, and Vishal M. Patel. "Spatio-Temporal Pixel-Level Contrastive Learning-based Source-Free Domain Adaptation for Video Semantic Segmentation." In *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2022. (Under Review)

[13] Shaoyan Pan, **Shao-Yuan Lo**, Min Huang, Chaoqiong Ma, Jacob Wynne, Tonghe Wang, Tian Liu, and Xiaofeng Yang. "Deep Learning-based Multi-Organ CT Segmentation with Adversarial Data Augmentation." In *SPIE Medical Imaging (SPIE MI)*, 2023.

[12] **Shao-Yuan Lo**, Poojan Oza, and Vishal M. Patel. "Adversarially Robust One-class Novelty Detection." In *IEEE Transactions on Pattern Analysis and Machine Intelligence (T-PAMI)*, 2022.

[11] **Shao-Yuan Lo**, Wei Wang, Jim Thomas, Jingjing Zheng, Vishal M. Patel, and Cheng-Hao Kuo. "Learning Feature Decomposition for Domain Adaptive Monocular Depth Estimation." In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2022.

[10] **Shao-Yuan Lo** and Vishal M. Patel. "Exploring Adversarially Robust Training for Unsupervised Domain Adaptation." In *Asian Conference on Computer Vision (ACCV)*, 2022.

[9] **Shao-Yuan Lo** and Vishal M. Patel. "Defending Against Multiple and Unforeseen Adversarial Videos." In *IEEE Transactions on Image Processing (T-IP)*, 2021.

[8] **Shao-Yuan Lo** and Vishal M. Patel. "Error Diffusion Halftoning Against Adversarial Examples." In *IEEE International Conference on Image Processing (ICIP)*, 2021.

[7] **Shao-Yuan Lo**, Jeya Maria Jose Valanarasu, and Vishal M. Patel. "Overcomplete Representations Against Adversarial Videos." In *IEEE International Conference on Image Processing (ICIP)*, 2021.

[6] **Shao-Yuan Lo** and Vishal M. Patel. "MultAV: Multiplicative Adversarial Videos." In *IEEE International Conference on Advanced Video and Signal-based Surveillance (AVSS)*, 2021.

[5] **Shao-Yuan Lo**, Hsueh-Ming Hang, Sheng-Wei Chan, and Jing-Jhih Lin. "Efficient Dense Modules of Asymmetric Convolution for Real-Time Semantic Segmentation." In *ACM International Conference on Multimedia in Asia (MMAsia)*, 2019. [**Best Paper Award**]

[4] **Shao-Yuan Lo** and Hsueh-Ming Hang. "Exploring Semantic Segmentation on the DCT Representation." In *ACM International Conference on Multimedia in Asia (MMAsia)*, 2019. [Oral]

[3] **Shao-Yuan Lo**, Hsueh-Ming Hang, Sheng-Wei Chan, and Jing-Jhih Lin. "Multi-Class Lane Semantic Segmentation using Efficient Convolutional Networks." In *IEEE International Workshop on Multimedia Signal Processing (MMSP)*, 2019.

[2] Shang-Wei Hung, **Shao-Yuan Lo**, and Hsueh-Ming Hang. "Incorporating Luminance, Depth and Color Information by a Fusion-based Network for Semantic Segmentation." In *IEEE International Conference on Image Processing (ICIP)*, 2019. [Oral]

[1] Ping-Rong Chen*, **Shao-Yuan Lo***, Hsueh-Ming Hang, Sheng-Wei Chan, and Jing-Jhih Lin. "Efficient Road Lane Marking Detection with Deep Learning." In *IEEE International Conference on Digital Signal Processing (DSP)*, 2018.

Awards

- **Google CS Research Mentorship Program**, Google 2022
- **Government Scholarship to Study Abroad**, Ministry of Education, Taiwan 2020
- **Best Paper Award**, ACM MMAsia 2019 2019
- **Best Master Thesis Award**, Chinese Image Processing and Pattern Recognition Society 2019
- **Students' Outstanding Contribution Award** (highest honor of graduation), NCTU 2019
- **Dean's List**, EECS Honors Program, NCTU 2017
- **Scholarship for Outbound Exchange**, NCTU 2016
- **WINTEK Outstanding Freshman Scholarship**, WINTEK Corp. and NCTU 2013

Invited Talks

- Apr 5, 2022: "Adversarial Attacks and Defenses." At the Deep Learning (EN.520.638) course, Johns Hopkins University. Host: Prof. Vishal M. Patel.
- Jan 10, 2022: "Defending Against Multiple and Unforeseen Adversarial Videos." At National Yang Ming Chiao Tung University, Taiwan. Host: Prof. Wen-Hsiao Peng.
- Jan 5, 2022: "Defending Against Multiple and Unforeseen Adversarial Videos." At Academia Sinica, Taiwan. Host: Prof. Jun-Cheng Chen.
- Jun 19, 2021: "Adversarial Attacks and Defenses in Videos." At CVPR 2021 Tutorial on Adversarial Machine Learning in Computer Vision, Virtual. Host: Prof. Cihang Xie.

Academic Services

- **Journal Reviewer:** IEEE T-PAMI, IEEE T-CSVT, IEEE T-SMC, Pattern Recognition
- **Conference Reviewer:** CVPR (2022-23), ICCV (2021), ECCV (2022), ICLR (2023), AAAI (2023), WACV (2021-22), ACCV (2022), ICIP (2022), AVSS (2021-22)
- **Teaching Assistant:** Deep Learning (EN.520.638), JHU, Spring (2021, 2022)

Programming Skills

- **Programming Languages:** Python, MATLAB, C/C++
- **Deep Learning Libraries:** PyTorch, TensorFlow, Caffe
- **Hardware Design Tools:** Verilog, HSPICE, Cadense Virtuoso

Leadership

- Vice President, JHU Taiwanese Student Association 2020 –2022
- Secretary, NCTU EECS Student Association 2015 –2016
- Treasurer, NCTU Chinese Chess Club 2014 –2015
- Arts Chair, NCTU EECS Summer Camp for High School Students 2014 –2015