Shao-Yuan Lo

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EDUCATION

Johns Hopkins University (JHU) Ph.D. in Electrical and Computer Engineering	Baltimore, MD 2019 –2023
- Thesis: Robust Computer Vision Against Adversarial Robustness and Domain Shifts	
– Committee: Vishal M. Patel (advisor), Rama Chellappa, Alan Yuille, Jesus Villalba	
M.S.E. in Electrical and Computer Engineering	2019 - 2021
National Chiao Tung University (NCTU)	Hsinchu, Taiwan
 – Thesis: Real-Time Semantic Segmentation Networks for Autonomous Driving 	2017 -2019
– Committee: Hsueh-Ming Hang (advisor), Wen-Hsiao Peng, Wen-Huang Cheng	
B.S. in EECS Undergraduate Honors Program	2013 - 2017
University of Illinois at Urbana-Champaign (UIUC) Exchange Program in Electrical and Computer Engineering	Champaign, IL 2016

WORK EXPERIENCE

Honda Research Institute USA	San Jose, CA
Research Scientist	Jul. 2023 –Present
- Topic: Video understanding and multimodal LLMs for socially balanced services	
– Collaborators: Kwonjoon Lee, Hengbo Ma, and Behzad Dariush	
Amazon (Just Walk Out Team)	Seattle, WA
Applied Scientist Intern	May 2022 – Aug. 2022
– Topic: Source-free domain adaptation for video semantic segmentation [14] (CVPR'23)	
– Mentors: Poojan Oza, Sumanth Chennupati, and Alejandro Galindo	
Amazon (Astro Team)	Bellevue, WA
Applied Scientist Intern	May 2021 – Aug. 2021
- Topic: Unsupervised domain adaptation for monocular depth estimation [11] (IROS'22)	

– Mentors: Wei Wang, Jim Thomas, Jingjing Zheng, and Cheng-Hao Kuo

Research Interests

Adversarial Machine Learning [6-10, 12-13], Domain Adaptation [11, 14], Video Understanding [6-7, 9, 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), 2023.
- [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. [Journal presentation at ICIP 2022]
- [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]
- 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

•	CVPR DEI Travel Award, IEEE/CVF CVPR 2023	2023
•	Google CS Research Mentorship Program, Google Research	2022
•	Government Scholarship to Study Abroad, Ministry of Education, Taiwan	2020
•	First-Year Doctoral Fellowship, ECE Dept., JHU	2019
•	Government Scholarship to World Top 100 Universities, Ministry of Education, Taiwan	2019
•	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), 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 14, 2023: "Robust Computer Vision Against Adversarial Examples and Domain Shifts." At Computational Cognition, Vision, and Learning (CCVL) Lab, Johns Hopkins University. Host: Prof. Alan Yuille.
- 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-IP, IEEE RA-L, IEEE T-CSVT, IEEE T-SMC, Pattern Recognition, Medical Physics
- Conference Reviewer: CVPR (2022-23), ICCV (2021-23), ECCV (2022), ICLR (2023), AAAI (2023-24), WACV (2021-24), ACCV (2022), ICIP (2022-23), AVSS (2021-22)
- Teaching Assistant: Deep Learning (EN.520.638), JHU, Spring (2021, 2022, 2023)

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