YU-JHE LI

Homepage: https://yujheli.github.io/
Email: yujheli@cs.cmu.edu

RESEARCH INTERESTS

Computer Vision and Machine Learning, particularly representation learning, domain adaptation, 2D/3D multi-object detection, tracking, re-identification, and 2D/3D disentanglement and generation.

EDUCATION

Carnegie Mellon University, Pittsburgh, PA *Aug. 2020 - Current*
Ph.D. in Electrical and Computer Engineering (Advisor: Prof. Kris Kitani) GPA: 4.0/4.0

National Taiwan University, Taipei, Taiwan *Sep. 2017 - Jan. 2019*
M.S. in Communication Engineering (Advisor: Prof. Frank Wang) Major GPA: 4.18/4.3

National Tsing Hua University, Hsinchu, Taiwan *Sep. 2013 - Jan. 2017*
B.S. in Electrical Engineering and Computer Science Major GPA: 4.09/4.3

RESEARCH EXPERIENCE

The Robotics Institute, Carnegie Mellon University Sep. 2020 - Current
Ph.D. student *working with Prof. Kris Kitani* *Pittsburgh, PA, USA*

- 3D human pose estimation with multi-view depth cameras.
- Radar azimuth super-resolution for vehicle detection.
- Lidar-Radar fusion for vehicle detection.
- Designed and applied a segmentation model for crack and rust detection.

Adobe Research May. 2023 - Aug. 2023
Research Intern *working with Xin Lu, Xinyang Zhang, Wentian Zhao* *San Jose, CA, USA*

- Strengthen the generalization of the segmentation model to unseen domains.

Meta Research May. 2022 - Aug. 2022
Research Intern *working with Tao Xu, Bichen Wu, Albert Pumarola* *Burlingame, CA, USA*

- GAN inversion of style-based neural radiance fields (NeRFs).
- Contrastive latent diffusion for latent-based neural radiance fields (NeRFs).

Facebook Research (now Meta Research) May. 2021 - Aug. 2021
Research Intern *working with Xiaoliang Dai, Chih-Yao Ma, Kan Chen* *Menlo Park, CA, USA*

- Unsupervised domain adaptation in object detection.

The Robotics Institute, Carnegie Mellon University Sep. 2019 - Aug. 2020
Research Associate *working with Prof. Kris Kitani* *Pittsburgh, PA, USA*

- Built cross-camera tracking model for workers in construction sites using location, motion, and appearance deep features, followed by action recognition.
- Learned clothing color invariant representations via adversarial learning and body structure disentanglement for person re-identification.

Vision and Learning Lab, National Taiwan University Sep. 2017 - Jul. 2019
Graduate Research Assistant *working with Prof. Yu-Chiang Frank Wang* *Taipei, Taiwan*

- Built novel deep framework for unsupervised learning and domain adaptation in re-identification via unsupervised pose disentanglement.
- Learned resolution-invariant representations for cross-resolution tasks via adversarial learning of super-resolution and image generation.

PUBLICATIONS

Conference Papers:

1. **Yu-Jhe Li**, Shawn Hunt, Jinhyung Park, Matthew O'Toole, Kris Kitani. "Azimuth Super-Resolution for Autonomous Driving." *IEEE Conference on Computer Vision and Pattern Recognition (CVPR).* Jun 2023.
2. **Yu-Jhe Li**, Matthew O'Toole, Kris Kitani. "ST-MVDNet++: Improve Vehicle Detection with Lidar-Radar Geometrical Augmentation via Self-Training." *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP).* June 2023.
3. Takehiko Ohkawa, **Yu-Jhe Li**, Qichen Fu, Ryosuke Furuta, Kris Kitani, and Yoichi Sato. "Domain Adaptive Hand Keypoint and Pixel Localization in the Wild ." *European Conference on Computer Vision (ECCV).* Oct 2022.
4. **Yu-Jhe Li**, Jinhyung Park, Matthew O'Toole, Kris Kitani. "Modality-Agnostic Learning for Radar-Lidar Fusion in Vehicle Detection ." *IEEE Conference on Computer Vision and Pattern Recognition (CVPR).* Jun 2022.
5. **Yu-Jhe Li**, Xiaoliang Dai, Chih-Yao Ma, Yen-Cheng Liu, Kan Chen, Bichen Wu, Zijian He, Kris Kitani, Peter Vadja. "Cross-Domain Adaptive Teacher for Object Detection." *IEEE Conference on Computer Vision and Pattern Recognition (CVPR).* Jun 2022.
6. **Yu-Jhe Li**, Xinshuo Weng, Yan Xu, and Kris Kitani. "Visio-Temporal Attention for Multi-Camera Multi-Target Association." *IEEE International Conference on Computer Vision (ICCV).* Oct. 2021.
7. Jinhyung Park, Yi-Chun Chen, **Yu-Jhe Li**, and Kris Kitani. "Crack Detection and Refinement via Deep Reinforcement Learning." *IEEE International Conference on Image Processing (ICIP).* Oct 2021.
8. Yan Xu, **Yu-Jhe Li**, Xinshuo Weng, and Kris Kitani. "Wide-Baseline Multi-Camera Calibration using Person Re-Identification." *IEEE Conference on Computer Vision and Pattern Recognition (CVPR).* Jun 2021.
9. **Yu-Jhe Li**, Xinshuo Weng, Kris Kitani. "Learning Shape Representations for Person Re-identification under Clothing Change." *Winter Conference on Applications of Computer Vision (WACV).* Jan 2021.
10. Jia-Wei Yan, Ci-Siang Lin, Fu-En Yang, **Yu-Jhe Li**, and Yu-Chiang Frank Wang. "Semantics-Guided Representation Learning with Applications to Visual Synthesis." *International Conference on Pattern Recognition (ICPR).* Jan 2021.
11. Yen-Ting Liu, **Yu-Jhe Li**, and Yu-Chiang Frank Wang. "Transforming Video Concepts into Video Summarization." *Asian Conference on Computer Vision (ACCV).* Nov 2020.
12. **Yu-Jhe Li**, Ci-Siang Lin, Yan-Bo Lin, and Yu-Chiang Frank Wang. "Cross-Dataset Person Re-Identification via Unsupervised Pose Disentanglement and Adaptation." *IEEE International Conference on Computer Vision (ICCV).* Nov 2019.
13. **Yu-Jhe Li***, Yun-Chun Chen*, Yen-Yu Lin, Xiaofei Du, and Yu-Chiang Frank Wang. "Recover and Identify: Generative Dual Model for Cross-Resolution Person Re-Identification." *IEEE International Conference on Computer Vision (ICCV).* Nov 2019. (* indicates equal contribution)
14. Yen-Ting Liu, **Yu-Jhe Li**, Fu-En Yang, Shang-Fu Chen, and Yu-Chiang Frank Wang. "Learning Hierarchical Self-Attention for Video Summarization." *IEEE International Conference on Image Processing (ICIP).* Sep 2019.
15. Wen-Hsuan Chu, **Yu-Jhe Li**, Jing-Cheng Chang, and Yu-Chiang Frank Wang. "Spot and Learn: A Maximum-Entropy Image Patch Sampler for Few-Shot Classification." *IEEE Conference on Computer Vision and Pattern Recognition (CVPR).* Jun 2019.
16. Yan-Bo Lin, **Yu-Jhe Li**, and Yu-Chiang Frank Wang. "Dual-modality Seq2seq Network for Audio-Visual Event Localization." *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP).* May 2019.
17. Yun-Chun Chen*, **Yu-Jhe Li***, XiaoFei Du, and Yu-Chiang Frank Wang. " Learning Resolution-Invariant Deep Representations for Person Re-Identification." *AAAI Conference on Artificial Intelligence (AAAI).* Jan 2019. (* indicates equal contribution)
18. **Yu-Jhe Li**, Hsin-Yu Chang, Yu-Jing Lin, Po-Wei Wu, and Yu-Chiang Frank Wang. "Deep Reinforcement Learning for Playing 2.5D Fighting Games." *IEEE International Conference on Image Processing (ICIP).* Oct 2018.
19. **Yu-Jhe Li**, Fu-En Yang, Yen-Cheng Liu, Yu-Ying Yeh, Xiao-Fei Du, and Yu-Chiang Frank Wang. "Adaptation and Re-Identification Network: An Unsupervised Deep Transfer Learning Approach to Person Re-Identification." *IEEE Conference on Computer Vision and Pattern Recognition (CVPR) Workshops.* Jun 2018.
20. Yun-Chun Chen, **Yu-Jhe Li**, Aragorn Tseng, and Tsungnan Lin. "Deep Learning for Malicious Flow Detection." *IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC).* Oct 2017.

Pre-prints or reports:

- **Yu-Jhe Li**, Tao Xu, Bichen Wu, Ningyuan Zheng, Xiaoliang Dai, Albert Pumarola, Peizhao Zhang, Peter Vajda, Kris Kitani. "3D-Aware Encoding for Style-based Neural Radiance Fields." *(In Arxiv 2022)*
- **Yu-Jhe Li***, Yun-Chun Chen*, Yen-Yu Lin, and Yu-Chiang Frank Wang. "Cross-Resolution Adversarial Dual Network for Person Re-Identification and Beyond." *(In Arxiv 2020)* (* indicates equal contribution)

TEACHING EXPERIENCE

Carnegie Mellon University
Teaching Assistant *USA*

- 18-661: Introduction to Machine Learning for Engineers *Spring 2022*
- 18-793: Image and Video Processing *Fall 2021*

National Taiwan University
Teaching Assistant *Taiwan*

- CommE 5052: Deep Learning for Computer Vision *Spring 2019*
- CommE 5052: Deep Learning for Computer Vision *Spring 2018*
- EE 1004: Introduction to Programming *Fall 2017*

ACADEMIC HONORS (SELECTED)

- **Qualcomm Innovation Fellowship,** *2022.* *USA*
- **Best Industrial Impact Paper Award,** *ICIP 2021.* *USA*
- **Best Master Thesis Award,** *TAAI 2019.* *Taipei, Taiwan*
- **Best Master Thesis Award,** *IPPR 2019.* *Taipei, Taiwan*
- **Foxconn Technology Research Award,** *Foxconn Technology 2019.* *Taipei, Taiwan*
- **Second Place,** *Nvidia GTC 2018 research poster competition.* *Taipei, Taiwan*

PROFESSIONAL ACTIVITY

- **Conference Reviewer or Program Commitee:**
  IEEE Conference on Computer Vision and Pattern Recognition (CVPR) (2020, 2021, 2022, 2023)
  IEEE International Conference on Computer Vision (ICCV) (2021, 2023)
  International Conference on Learning Representation (ICLR) (2022, 2023)
  Neural Information Processing Systems (NeurIPS) (2022)
  International Conference on Machine Learning (ICML) (2023)
  Winter Conference on Applications of Computer Vision (WACV) (2021)
  European Conference on Computer Vision (ECCV) (2020, 2022)
  Asian Conference on Computer Vision (ACCV) (2020)
- **Journal Reviewer:**
  Transactions on Pattern Analysis and Machine Intelligence (TPAMI) (2021)