Haozhe Liu

AI Initiative, KAUST

HomePage

July 26, 2022

haozhe.liu@kaust.edu.sa

Google Scholar

Education

- **SZU (Shenzhen University) - Computer Vision Institute** Shenzhen, China
  M.S. in Computer Science *June. 2019 - July. 2022*
  − Research Interests: Adversarial Learning & Self-supervised Learning

- **KAUST - AI Initiative** Saudi Arabia
  PhD in Computer Science *Aug. 2022 - Present*
  − Research Interests: Video-based Decision System & Data-efficient Machine Learning

Selected Publications

1. **Liu, H.**, Wu, H., Xie, W., Liu, F., & Shen, L. (2021). Group-wise Inhibition based Feature Regularization for Robust Classification. ICCV'2021 [pdf] code

2. **Liu, H.**, Liang, H., Hou, X., Wu, H., Liu, F., Shen, L. (2021) Manifold-preserved GANs. arXiv preprint arXiv:2109.08955. [pdf]

3. **Liu, H.**, Ji, H., Li, Y., He, N., Wu, H., Liu, F., Shen, L., Zheng, Y. (2022) Robust Representation via Dynamic Feature Aggregation. arXiv preprint arXiv:2205.07466. [pdf] [code]

4. Zhang W., **Liu, H.**, Liu, F., Ramachandra, R., & Busch, C. (2022). Effective Presentation Attack Detection Driven by Face Related Task. ECCV'2022 (**Equal Contribution**) [pdf] [code]

5. Ji, H.,**Liu, H.** Li, Y., Xie, J., He, N., Huang, Y., Dong, W., Chen, X., Shen, L., Zheng, Y. (2022) Point Beyond Class: A Benchmark for Weakly Semi-Supervised Abnormality Localization in Chest X-Rays. MICCAI'2022. (**Equal Contribution**) [code]

6. **Liu, H.**, Kong, Z., Ramachandra, R., Liu, F., Shen, L., & Busch, C. (2021). Taming Self-Supervised Learning for Presentation Attack Detection: In-Image De-Folding and Out-of-Image De-Mixing. arXiv preprint arXiv:2109.04100. (submitted to IEEE T-NNLS) [pdf]

7. **Liu, H.**, Zhang, W., Liu, F., Wu, H.,& Shen, L. (2021). Fingerprint Presentation Attack Detector Using Global-Local Model. IEEE T-Cybernetics. [pdf] [code]

8. Liu, F., **Liu, H.**, Zhang, W., Liu, G., & Shen, L. (2021). One-Class Fingerprint Presentation Attack Detection Using Auto-Encoder Network. IEEE T-IP, 30, 2394-2407. [pdf]

9. Liu, F., Kong Z., **Liu, H.**, Zhang W. & Shen L. (2022). Fingerprint Presentation Attack Detection by Channel-wise Feature Denoising. IEEE T-IFS. [pdf]

10. Zhang, W., Sun, X., Li, L., **Liu, H.**, Liu, F., He, N., Zheng, Y. (2022) A Multi-task Network with Weight Decay Skip Connection Training for Anomaly Detection in Retinal Fundus Images. MICCAI'2022. [code]

11. Wu, H., Chen, K., Luo, Y., Qiao, R., Ren, B., **Liu, H.**, Xie, W., Shen, L. (2022) Scene Consistency Representation Learning for Video Scene Segmentation. CVPR'2022. [pdf][code]

Awards, Grants & Honors

Outstanding Graduate Award (**Rate≤5%**) 2022
China National Scholarship (**Rate≤0.02%**) 2021
Excellent Academic Scholarship, First Class 2020
Excellent Academic Scholarship, Second Class 2019
National University Big Data Application Innovation Competition in Northwest, First Place 2018
National University Big Data Application Innovation Competition, Second Place 2018
Excellent Graduation Design (Thesis) of SUST, Best Undergraduate Thesis 2018

Research Experience

- **AI Initiative (KAUST)**   Saudi Arabia
  PhD Candidate supervised by Prof.Juergen Schmidhuber and Prof.Bernard Ghanem 2022 - Present
    – Research Field includes Video based Decision System, Data-efficient Machine Learning
    – Joined the Project, Highway RL, to design a novel multi-step Value Iteration method with exponential contraction rate but only linear computational complexity, which is submitted to **NIPS'2022**

- **Jarvis Lab (Tencent)**   Shenzhen, China
  Internship supervised by Mentor:N. He & Y. Li and Director:Y. Zheng   *2021 - Present*
    – Proposed Dynamic Feature Aggregation to improve the robustness against adversarial attacks
    – Proposed Point Beyond Class to reduce the annotation cost for medical object detection, which is accepted by **MICCAI'2022**
    – Participate to NICO Challenge (ECCV'2022 workshop), our team reach to 5th/40 in both tracks at Phase I.

- **Norwegian Biometrics Laboratory (NTNU)**   Gjøvik, Norway
  Visiting Student supervised by Prof. C. Busch and Prof. R. Ramachandra   *2021 - Present*
    – Proposed a self-supervised learning based method for face and fingerprint presentation attack detection, which is submitted to **IEEE TNNLS**.
    – Proposed a face presentation attack detector based on the taskonomy features, which is accepted by **ECCV' 2022**.

- **Computer Vision Insitute (SZU)**   Shenzhen, China
  Member in Biometrics Group supervised by Prof. F. Liu and Prof. L. Shen   *2019 - Present*
    – Proposed a regularization method to imporve the robustness of CNN based models, which is accepted by **ICCV'2021** and open source.
    – Proposed a Manifold-preserved GANs to mitigate the mode collapse and gradient exploding.
    – Collected a famous presentation attack dataset based on OCT and for **the first time** established a one-class framework for OCT based PAD. This work is accepted by **IEEE TIP**
    – Proposed a presentation attack detector using Global-Local model, which reaches over 90% in terms of TDR@FDR=1% on LivDet2017 for **the first time** (Accepted by **IEEE TCYB**)