Haozhe Liu
AI Initiative, KAUST
HomePage

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Google Scholar

Education

- **KAUST - AI Initiative** Saudi Arabia
  PhD in Computer Science under the supervision of Juergen Schmidhuber *Aug. 2022 - Present*
  - Research Interests: Video-based Decision System & Sequence Modelling
- **SZU (Shenzhen University) - Computer Vision Institute** Shenzhen, China
  M.S. in Computer Science *June. 2019 - July. 2022*
  - Research Interests: Adversarial Learning & Self-supervised Learning

Selected Publications

1. **Liu, H.**, Zhuge, M., Li, B., Wang, Y., Faccio, F., Ghanem, B. & Schmidhuber, J. Learning to Identify Critical States for Reinforcement Learning from Videos. ICCV'2023 [pdf] [code]
2. **Liu, H.**, W Zhang, Li, B., Wu, H., He, N., Huang, Y., Li, Y., Ghanem, B. & Zheng, Y. AdaptiveMix: Improving GAN Training via Feature Space Shrinkage. CVPR'2023 [pdf] [code]
3. **Liu, H.**, Li, B., Wu, H., Liang, H., Huang, Y., Li, Y., ... & Zheng, Y. Combating Mode Collapse in GANs via Manifold Entropy Estimation. AAAI'2023 [pdf] [code]
4. **Liu, H.**, Wu, H., Xie, W., Liu, F., & Shen, L. (2021). Group-wise Inhibition-based Feature Regularization for Robust Classification. ICCV'2021 [pdf] [code]
5. **Liu, H.**, Zhang, W., Liu, F., Wu, H.,& Shen, L. Fingerprint Presentation Attack Detector Using Global-Local Model. IEEE T-Cybernetics. [pdf] [code]
6. **Liu, H.**, Zhang, W., Xie J., Wu, H., Li, B., Zhang, Z., Li, Y., Huang, Y., Ghanem, B., Y. Zheng. Decoupled Mixup for Out-of-Distribution Visual Recognition. ECCV'2022 Workshop [pdf] [code]
7. Zhang W., **Liu, H.**, Liu, F., Ramachandra, R., & Busch, C. Effective Presentation Attack Detection Driven by Face Related Task. ECCV'2022 (**Equal Contribution**) [pdf] [code]
8. 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**) [pdf] [code]
9. Wu, H., Chen, K., **Liu, H.**, Zhuge, M., B Li, . . . , & Ghanem, B. NewsNet: A Novel Dataset for Hierarchical Temporal Segmentation CVPR'2023.(**Equal Contribution**) [pdf][code]
10. 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]
11. Xie, J., Li, Y., Huang, Y., **Liu, H.**, Zhang, W., Zheng, Y., & Shou, M. Z. (2023). BoxDiff: Text-to-Image Synthesis with Training-Free Box-Constrained Diffusion. ICCV'2023 [pdf][code]
12. 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 Student supervised by Prof.Juergen Schmidhuber *2022 - Present*
  - Research Field includes explainable, reliable, and responsible AI.
  - Proposed Deep State Identifier to identify and recognize relevant states/actions/rewards for explaining the behavior given a policy. This project is accepted by **ICCV'2023**.

- **Jarvis Lab (Tencent)** Shenzhen, China
  Internship supervised by Mentor:N. He & Y. Li and Director: Y. Zheng *2021 - 2022*
  - Proposed AdaptiveMix to improve GAN training, which is accepted by **CVPR'2023**. (This project cooperates with AI Initiative, KAUST)
  - Proposed offline entropy estimation to combat mode collapse, which is accepted **AAAI'2023**. (This project cooperates with AI Initiative, KAUST.)
  - 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 - 2022*
  - Proposed a self-supervised learning-based method for face and fingerprint presentation attack detection, which is accepted **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 - 2022*
  - Proposed a regularization method to improve the robustness of CNN-based models, which is accepted by **ICCV'2021** and open source.
  - 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**)