

Education

- **SUST (Shaanxi University of Science and Technology)** Xi'an, China
B.S. in Mechanical and Electrical Engineering 2017 - 2019
 - Undergraduate thesis was awarded the first prize of excellent graduation design (Thesis) of SUST in 2019.
- **SZU (Shenzhen University) - Computer Vision Institute** Shenzhen, China
M.S. in Computer Science June. 2019 - Present
 - Research Interests: Adversarial Learning & Self-supervised Learning
 - Published 10 academic papers.
 - IELTS Score: Overall Band Score is 6.5
 - Invited as a reviewer of the top-tier conferences, e.g. CVPR.

Selected Publications

1. **Liu, H.**, Wu, H., Xie, W., Liu, F., & Shen, L. (2021). Group-wise Inhibition based Feature Regularization for Robust Classification. International Conference on Computer Vision (ICCV) [\[pdf\]](#)
2. **Liu, H.**, Liang, H., Hou, X., Wu, H., Liu, F., Shen, L. (2021) Manifold-preserved GANs. arXiv preprint arXiv:2109.08955. (submitted to CVPR 2022.) [\[pdf\]](#)
3. **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 CVPR 2022) [\[pdf\]](#)
4. **Liu, H.**, Zhang, W., Liu, F., Wu, H., & Shen, L. (2021). Fingerprint Presentation Attack Detector Using Global-Local Model. IEEE Transactions on Cybernetics. [\[pdf\]](#)
5. Zhang W., **Liu, H.**, Ramachandra, R., Liu, F., Shen, L., & Busch, C. (2021). Face Presentation Attack Detection using Taskonomy Feature. arXiv preprint arXiv:2111.11046. (**Equal Contribution**, submitted to CVPR 2022) [\[pdf\]](#)
6. Liu, F., **Liu, H.**, Zhang, W., Liu, G., & Shen, L. (2021). One-Class Fingerprint Presentation Attack Detection Using Auto-Encoder Network. IEEE Transactions on Image Processing, 30, 2394-2407.¹ [\[pdf\]](#)
7. Liu, F., Shen, C., **Liu, H.**, Liu, G., Liu, Y., Guo, Z., & Wang, L. (2020). A flexible touch-based fingerprint acquisition device and a benchmark database using optical coherence tomography. IEEE Transactions on Instrumentation and Measurement, 69(9), 6518-6529. [\[pdf\]](#)
8. Liu, F., Kong Z., **Liu, H.**, Zhang W. & Shen L. (2021). Fingerprint Presentation Attack Detection by Channel-wise Feature Denoising. arXiv preprint arXiv:2111.07620. (submitted to IEEE TIFS) [\[pdf\]](#)

¹Liu, F. is my supervisor.

9. Lin, L., **Liu, H.**, Zhang, W., Liu, F., & Lai, Z. (2021, August). Finger Vein Verification using Intrinsic and Extrinsic Features. In 2021 IEEE International Joint Conference on Biometrics (IJCB) (pp. 1-7). (**Equal Contribution**) [\[pdf\]](#)

Awards, Grants & Honors

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

- 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, which is submitted to **CVPR2022**
- 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 **CVPR 2022**.
 - Proposed a face presentation attack detector based on the taskonomy features, which is submitted to **CVPR 2022**.
- Computer Vision Institute (SZU)** Shenzhen, China
 - *Member in Biometrics Group supervised by Prof. F. Liu and Prof. L. Shen* 2019 - Present
 - Proposed a regularization method to improve 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, which is prepared to submit to **CVPR 2022**.
 - 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**)
- Shaanxi Joint Laboratory of Artificial Intelligence (SUST)** Xi'an, China
 - *Research Assistant in Medical Image Analysis Group supervised by Dr. Qi Yong* 2017 - 2019
 - Used CNN based models to classify the stimulus of the given fMRI data using parallel algorithms on GPUs
 - Participated in the design of device, called Skin-Hearing, using the stimulus of skin to compensate for the loss of hearing.