

## Education

- **KAUST - AI Initiative** Saudi Arabia  
• *PhD Candidate in CS under the supervision of Juergen Schmidhuber* Aug. 2022 - Present
  - GPA:4.0/4.0
  - Research Interests: Explainable, Efficient, and Responsible Generative Model

## Selected Publications

1. **Liu, H.**, Zhang, W., Xie, J., Faccio, F., Xu, M., Xiang, T., Shou, Mike., Perez-Rua & J., Schmidhuber, J. Faster Diffusion Through Temporal Attention Decomposition. Under Review [\[code\]](#)
2. **Liu, H.**, Zhang, W., Li, B., Ghanem, B. & Schmidhuber, J. "Lazy" Layers Make Fine-tuned Diffusion Models More Traceable. Under Review [\[pdf\]](#)
3. **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 [\[pdf\]](#) [\[code\]](#)
4. **Liu, H.**, Zhang W., Li, B., Wu, H., He, N., Huang, Y., Li, Y., Ghanem, B. & Zheng, Y. AdaptiveMix: Improving GAN Training via Feature Space Shrinkage. CVPR'2023 [\[pdf\]](#) [\[code\]](#)
5. **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 [\[pdf\]](#) [\[code\]](#)
6. **Liu, H.**, Wu, H., Xie, W., Liu, F., & Shen, L. (2021). Group-wise Inhibition-based Feature Regularization for Robust Classification. ICCV'2021 [\[pdf\]](#) [\[code\]](#)
7. **Liu, H.**, Zhang, W., Liu, F., Wu, H., & Shen, L. Fingerprint Presentation Attack Detector Using Global-Local Model. IEEE T-Cybernetics. [\[pdf\]](#) [\[code\]](#)
8. **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 [\[pdf\]](#) [\[code\]](#)
9. Zhang, W., **Liu, H.**, Li, B., ..., Y. Zheng & Ghanem, B.. Dynamically Masked Discriminator for Generative Adversarial Networks NeurIPS'2023. (**Equal Contribution**)[\[pdf\]](#) [\[code\]](#)
10. Zhang W., **Liu, H.**, Liu, F., Ramachandra, R., & Busch, C. Effective Presentation Attack Detection Driven by Face Related Task. ECCV'2022 (**Equal Contribution**) [\[pdf\]](#) [\[code\]](#)
11. 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**) [\[pdf\]](#) [\[code\]](#)
12. Wu, H., Chen, K., **Liu, H.**, Zhuge, M., B Li, ... , & Ghanem, B. NewsNet: A Novel Dataset for Hierarchical Temporal Segmentation. CVPR'2023.(**Equal Contribution**) [\[pdf\]](#)[\[code\]](#)
13. Zhuge, M., **Liu, H.**, ... , & Schmidhuber, J. Mindstorms in Natural Language-Based Societies of Mind. NIPSW'2023 (**Best Workshop Paper**).(**Equal Contribution**) [\[pdf\]](#)[\[code\]](#)

## Awards, Grants & Honors

<b>Best Paper</b> on "Robustness of Zero/Few-shot Learning in Foundation Models" @ NIPSW .	2023
Co-PI of Grant on "Efficient Generative Models" @ SDAIA-KAUST ( <b>200k SAR</b> ) . . . . .	2023
Outstanding Graduate Award @ SZU ( <b>Rate<math>\leq</math>5%</b> ) . . . . .	2022
China National Scholarship @ SZU ( <b>Rate<math>\leq</math>0.02%</b> ) . . . . .	2021
Excellent Academic Scholarship, First Class @ SZU . . . . .	2020

## Research Experience

- **GenAI, Meta AI** London, United Kindom  
*Research Scientist Internship working with J.-M. Perez-Rua and T. Xiang* 2024 - Present
  - Research Topic: Foundational Training, Image-to-Video Generation, Text-to-Image Generation.
  - Publication Records: Under Review  $\times$  1.
  - Co-Developing a foundtional text-to-image model to support several well-known products.
  - Scaling Auto-Regressive Diffusion to Video Generation.
- **GenAI, KAUST** Saudi Arabia  
*PhD Candidate supervised by Prof. Juergen Schmidhuber* 2022 - Present
  - Research Topic: Neural Networks with Multiple-Step Inferences, e.g., Diffusion Model, Auto-Regressive Model, and RL Agents.
  - Publication Records: ICCV  $\times$  1; CVPR  $\times$  2; NIPSW  $\times$  1; Under Review  $\times$  3.
  - Highlight: NLSOM is awarded **Best paper@NIPS'23 Ro-FoMo Workshop**.
  - Highlight: TGate is merged into Diffusers Library and received over **300** stars on GitHub.
- **Jarvis Lab, Tencent** Shenzhen, China  
*Internship working with Mentor: N. He & Y. Li and Director: Y. Zheng* 2021 - 2022
  - Research Topic: Generative Model and Medical Imaging.
  - Publication Records: NIPS  $\times$  1, CVPR  $\times$  1; ICCV  $\times$  1; AAAI  $\times$  1; MICCAI  $\times$  2; MIA  $\times$  1; PR  $\times$  1; ECCVW  $\times$  1.
  - Highlight: MaF-GAN is recognized as **Oral** paper@AAAI.
  - Highlight: Ranked 4th in ECCV'2022 NICO Challenge.
- **Norwegian Biometrics Laboratory, NTNU** Gjøvik, Norway  
*Visiting Student supervised by Prof. C. Busch and Prof. R. Ramachandra* 2021 - 2022
  - Research Topic: AI Safety, Facial/Fingerprint Recognition System.
  - Publication Records: ECCV  $\times$  1, IEEE TNNLS  $\times$  1.
- **Computer Vision Insitute, SZU** Shenzhen, China  
*Master student supervised by Prof. F. Liu and Prof. L. Shen* 2019 - 2022
  - Research Topic: AI Safety, Facial/Fingerprint Recognition System.
  - Publication Records: CVPR  $\times$  1; ICCV  $\times$  1; IEEE TIP  $\times$  1; IEEE TCYB  $\times$  1, IEEE TIFS  $\times$  1, IEEE TIM  $\times$  1.
  - Highlight: Recognized as **China National Scholarship** and Outstanding Graduate Award.