

## Education

- **KAUST - AI Initiative** Saudi Arabia  
• *Ph.D. in CS (Advisor: Juergen Schmidhuber)* Aug. 2022 - Mar. 2026
  - GPA:4.0/4.0
  - Research Interests: Explainable, Efficient, and Responsible Generative Model

## Selected Publications

1. **Liu, H.**, Liu, D., Zhuge, M., Zhou, Z., Xie, T., He, S., ... & Schmidhuber, J. (2024). Mixture of States: Routing Token-Level Dynamics for Multimodal Generation. CVPR'2026 [[pdf](#)]
2. **Liu, H.**, Liu, S., Zhou, Z., ... & Pérez-Rúa, J. M. (2024). MarDini: Masked Autoregressive Diffusion for Video Generation at Scale. TMLR [[pdf](#)]
3. **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. ICLR'2026 & TMLR [[pdf](#)][[code](#)]
4. **Liu, H.**, Zhang, W., Li, B., Ghanem, B. & Schmidhuber, J. "Lazy" Layers Make Fine-tuned Diffusion Models More Traceable. Technical Report [[pdf](#)]
5. **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](#)]
6. **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](#)]
7. **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](#)]
8. **Liu, H.**, Wu, H., Xie, W., Liu, F., & Shen, L. (2021). Group-wise Inhibition-based Feature Regularization for Robust Classification. ICCV'2021 [[pdf](#)] [[code](#)]
9. **Liu, H.**, Zhang, W., Liu, F., Wu, H.,& Shen, L. Fingerprint Presentation Attack Detector Using Global-Local Model. IEEE T-Cybernetics. [[pdf](#)] [[code](#)]
10. **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](#)]
11. Zhang, W., **Liu, H.**, Li, B.,..., Y. Zheng & Ghanem, B.. Dynamically Masked Discriminator for Generative Adversarial Networks NeurIPS'2023. (**Equal Contribution**) [[pdf](#)] [[code](#)]
12. 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](#)]
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

**Best Paper** on "Robustness of Zero/Few-shot Learning in Foundation Models" @ NIPSW . 2023  
Co-PI of Grant on "Efficient Generative Models" @ SDAIA-KAUST (**200k SAR**) . . . . . 2023  
Outstanding Graduate Award @ SZU (**Rate $\leq$ 5%**) . . . . . 2022  
China National Scholarship @ SZU (**Rate $\leq$ 0.02%**) . . . . . 2021

## Research Experience

- **Efficient AI, NVIDIA Research** Singapore  
*Research Scientist working with Prof. Song Han* 2026 - present
  - Research Topic: Efficient AI, Large-scale Pre-training, Image/Video Generation
- **BizAI, Meta** MPK, United States  
*Research Scientist Internship working with Ding Liu and Wei Liu* 2025 - 2025
  - Research Topic: Large-scale Pre-training, Text-to-Image Generation, Mixed-Modality Generation
  - Publication Records: Under Review  $\times$  5.
  - Co-developing a commercial 7B text-to-image model trained on over 1B image-text pairs, deployed in several widely used products.
  - Built a 20B native LLM-driven multimodal generation prototype from scratch.
  - Contributed to developing a native unified model for both visual understanding and generation tasks.
- **MGenAI, Meta** London, United Kindom  
*Research Scientist Internship working with J.-M. Perez-Rua and T. Xiang* 2024 - 2024
  - Research Topic: Foundational Training, Image-to-Video Generation, Text-to-Image Generation.
  - Publication Records: TMLR  $\times$  2; ICCV  $\times$  1; CVPR  $\times$  1.
  - Co-Developing a foundational 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; TMLR  $\times$  2, Under Review  $\times$  1.
  - 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.