

Manni Cui

mannicui@hust.edu.cn | manniciui@berkeley.edu



EDUCATION

Huazhong University of Science and Technology (HUST)

Sep. 2024 – Jun. 2028

B.Eng. in Electronic Information Engineering

Innovation Experimental Class (Advanced Mathematics and Physics Track)

- Recipient of the National Scholarship.

University of California, Berkeley | Exchange Student

Aug. 2026 – Jun. 2027

RESEARCH EXPERIENCE

Security Department, Ant Group | Research Intern

May 2026 – Aug. 2026

Learning Continuous Source Responses for Generalizable AI-Generated Image Detection

- **Research:** We investigated how shortcut learning limits generalization to unseen generators and robustness to post-processing in AI-generated image detection. Existing methods mitigate shortcuts through model design, data curation, or representation constraints, but largely retain binary classification. We hypothesized that supervision at only the real/fake endpoints leaves the feature space sparsely constrained, allowing semantic, format, or generator-specific biases to shape decision boundaries. We therefore proposed CuRe, replacing binary classification with regression of mixing ratios for continuous pixel-space interpolations between real and generated images to provide dense supervision. After fine-tuning the encoder, we found that real–fake differences concentrate in a low-dimensional subspace and extracted it to further suppress shortcut information.
- **Results:** Improved mean balanced accuracy (BAcc) by 5.2 percentage points over the previous best method across 10 public out-of-distribution benchmarks. Submitted to ICLR 2027. [arXiv](#); first author.

Pattern Recognition Laboratory, Institute of Automation, Chinese Academy of Sciences | Remote Research Assistant

Nov. 2025 – May 2026

Rethinking the Readout: Unlocking Video Backbones for AI-Generated Video Detection

- **Research:** We investigated the counterintuitive observation that video backbones often trail image encoders on detection benchmarks despite their potential to better capture cross-frame inconsistencies and unnatural motion in generated videos. We hypothesized that compressing information over time, in addition to aggregating spatial patches, could obscure subtle motion differences. Statistical analysis before and after readout supported this hypothesis, showing that standard aggregation substantially weakened the patch-level motion heterogeneity distinguishing real from generated videos. Based on this finding, we proposed V-PVP, a dual-branch readout that models patch velocity fields to preserve temporal motion relationships across patches. It replaces only the final readout, leaving the backbone unchanged and enabling plug-in use across video models.
- **Results:** Achieved 95.28 AUC on AIGVDBench with VideoMAE fully frozen and only 0.5M additional trainable parameters, with consistent gains across backbones and adaptation settings. Accepted at NeurIPS 2026. [arXiv](#); co-first author (first-listed).

MIRROR: Manifold Ideal Reference ReconstructOR for Generalizable AI-Generated Image Detection

- **Research:** Addressed the limited generalization of AI-generated image detectors that rely on generator-specific local artifacts. Inspired by human vision, proposed MIRROR: a discrete codebook encodes the manifold prior of real images, and reconstruction residuals reveal fake signals that deviate from the real-image manifold, anchoring detection to generator-independent evidence.
- **Results:** Outperformed prior methods by 2.1% and 8.1% on standard and in-the-wild tests, respectively; achieved 89.6% fake-image detection accuracy on Human-AIGI. Accepted at NeurIPS 2026. [arXiv](#); co-first author (second-listed).

GlobalForge: Towards Robust AI-Generated Image Detection

- **Research:** We investigated why AI-generated image detectors remain vulnerable to post-processing despite strong performance on clean benchmarks. We found that they often overfit to local details that are easily disrupted by post-processing. We therefore proposed GlobalForge to limit reliance on local information and guide the model to learn global structural consistency, improving detection robustness under real-world conditions.
- **Results:** Improved mean BAcc by 5.89 percentage points over the previous best method across eight in-the-wild benchmarks. Built RealDeg-Bench, covering seven degradation operators and multi-stage degradation chains. Submitted to ICLR 2027. [arXiv](#); co-first author (first-listed).

Automated Animal Behavior Analysis via 3D Modeling | Team Lead Mar. 2025 – Dec. 2025

Joint project between the School of Electronic Information and Communications and Tongji Medical College, HUST

- **Research:** Led an interdisciplinary team to automate behavioral assessment of laboratory mice in drug-testing experiments, replacing labor-intensive and subjective manual observation. Integrated embedded data acquisition, system control, and 3D-model-based behavior analysis into an end-to-end hardware-to-software pipeline.
- **Impact:** The system was adopted by our medical collaborators. One related invention patent application has been accepted, with me listed as the second inventor (one of the student inventors). Won a National First Prize in the National Undergraduate Embedded Chip and System Design Competition and a National Gold Award in the Medical Innovation Competition. Transferred the system to the next cohort, turning a short-term competition project into a long-term medical-engineering collaboration between HUST's LangYa Team and Tongji Medical College.

HONORS & AWARDS

- National Scholarship; HUST Outstanding Student; Excellence Scholarship for Cultural and Athletic Activities.
- National First Prize, National Undergraduate Embedded Chip and System Design Competition; “D-Robotics Cup” Award.
- National Gold Award, Interdisciplinary Track, National College Student Medical Innovation Competition.
- Two papers accepted at NeurIPS 2026 as co-first author.