Cheng Dai

Hangzhou, China | daicheng@westlake.edu.cn | +86 177-8646-8465
Homepage | GitHub | LinkedIn | Google Scholar | ORCID

I am actively seeking Fall 2027 Ph.D. opportunities.

Research Profile

Thermal infrared hyperspectral imaging, HADAR-based physical vision, thermal inversion, computational imaging, generative AI, multimodal LLMs, audio intelligence, embodied AI systems, and lightweight deployment.

Publications and Preprints

[1] **TeX-1500: A Paired Real-World LWIR Hyperspectral Dataset and Benchmark for Temperature-Emissivity-Texture Decomposition**. arXiv, 2026. Paper | Code | Dataset | Model Weights
Cheng Dai, Jiale Lin, Hongyi Xu, Bingxuan Song, Ziyang Xie, and Fanglin Bao

[2] **HADAR-Based Thermal Infrared Hyperspectral Image Restoration**. arXiv, 2026. Paper | Code
Cheng Dai, Jiale Lin, Bingxuan Song, Yifei Chen, Jiashuo Chen, Xin Yuan, and Fanglin Bao

Education

Wuhan University 2025.09–2026.03

Graduate Study in Communication Engineering, State Key Lab. of Surveying, Mapping and Remote Sensing

- Average 90.79/100; First-class graduate scholarship; shifted research toward thermal infrared HSI and physical vision.

Jilin University 2021.08–2025.06

B.Eng. in Communication Engineering, School of Communication Engineering

- GPA 90.58/100; ranked 12/283.

Research Experience

Research Assistant, AI for Physics Lab 2025.09–Present

Westlake University; advised by Xin Yuan and Fanglin Bao

- Designed HADAR algorithms for thermal HSI restoration, TeX decomposition, and lightweight physical perception.
- Built TeX-1500 with 1,522 calibrated LWIR HSI-TeX pairs and TeX-UNet; released code, dataset, and weights.
- Co-developed HAIR for thermal HSI denoising, spectral calibration, inpainting, and super-resolution.
- Prototyped accelerated HADAR inversion with CUDA/JAX-style parallelization across spectral layouts.

Industry Experience

Audio AI Intern 2025.04–2025.09

Amoon AI, Audio Algorithm Team

- Collected 20k high-confidence infant-cry clips and expanded low-resource data with iterative pseudo-labeling.
- Fine-tuned BEATs, Audio-MAE, Wav2Vec2, Qwen-Audio, and CLAP; trained a Conformer from scratch.
- Used logs, phonetic rules, and staged training to reach 67.2% five-class accuracy and handle corner cases.
- Built six infant-VAD datasets and a detector with 98% accuracy and below 5% false alarms for edge deployment.
- Ran 60+ benchmarking experiments and related-method analyses for paper preparation.

AI Engineering Intern 2024.12–2025.02

Lightwheel AI, Embodied Asset Team

- Built tools for embodied simulation, asset construction, data collection, and teleoperation with Blender, MuJoCo, and RoboCasa.
- Developed SpaceMouse and Blender2YAML/YAML2Blender plugins, reducing validation cycles from roughly 20 days to 1 day.
- Maintained RoboCasa code: github.com/ruziniuuuuu/robocasa.

Honors and Awards

- Outstanding Graduate of Jilin University (top 5%); Outstanding Undergraduate Thesis (top 3%); First-Class Scholarship (1x), Second-Class Scholarship (3x), Academic and Technology Award (3x), Outstanding Student of the School (4x).
- Principal investigator of two completed innovation projects: a provincial reading-assistance system for visually impaired users, and a Chinese Academy of Sciences (CAS) / Changchun Institute of Optics, Fine Mechanics and Physics project on infrared small-target super-resolution, completed with excellent evaluation.
- First Prize, provincial National College Student Mathematics Competition; Honorable Mention, Mathematical Contest in Modeling; UCLA UAV communication course, Grade A.
- English CET-6: 508; CET-4: 521; college Russian elementary/intermediate courses: Excellent; one year of college German study.