Jiacheng Hou

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Research Interest

My research interest broadly lie in **3D computer vision**, **robust perception for autonomous driving**, **vision and language**, and **AI for science(biology + ecology)**

Education

The Ohio State University, Columbus OH — Aug 2024 – Present

B.S. in Computer Science and Engineering - Advisor: Wei-Lun (Harry) Chao

Publications

- AVA-Bench: Atomic Visual Ability Benchmark for Vision Foundation Models

  Zheda Mai, Arpita Chowdhury, Zihe Wang, Sooyoung Jeon, Lemeng Wang, **Jiacheng Hou**, Wei-Lun Chao

  arXiv:2506.09082, 2025

- BeetleFlow: An Integrative Deep Learning Pipeline for Beetle Image Processing

  Fangxun Liu, . . . **Jiacheng Hou**, . . . Wei-Lun Chao (22 authors)

  NeurIPS 2025 Workshop for Imageomics: Discovering Biological Knowledge from Images Using AI

- Continually Adapt or Not (CAN)? A Continual Learning Benchmark of Camera Trap Species Classification over Time

  Sooyoung Jeon, Zheda Mai, Hongjie Tian, Vidhi Bakshi, Lemeng Wang, **Jiacheng Hou**, Ping Zhang, Arpita Chowdhury, Wei-Lun Chao

  NeurIPS 2025 Workshop on Imageomics: Discovering Biological Knowledge from Images Using AI

Please see my website for more information.

Research Experience

Research Assistant, The Ohio State University – Columbus, OH — March 2025 – Present

3D Foundation Models For Object Detector

- Explored multi-view feature extraction and sensor fusion strategies to enhance the robustness of detection.
- Worked on training 3D detectors with 3D-enriched features generated by 3D foundation models to demonstrate the benefits of the geometry-grounded features for 3D detection.

Atomic Visual Ability Benchmark for Vision Foundation Models

- Led dataset construction for three Atomic Visual Abilities(AVAs): Orientation, Scene Classification, and Texture Recognition: defined labeling schemas and edge cases, sourced and filtered images, designed balanced splits, and aligned train-test distributions to isolate each ability without data leakage.
- Built the evaluation assets for Atomic Visual Abilities(AVAs), enabling reliable ability-level diagnosis in AVA-Bench and helping reveal distinctive “ability fingerprints” and failure modes of Vision Foundation Models.

Wildlife Camera Trap Animal Image System

- Assisted in building a camera-trap benchmark by aggregating 546 camera traps across 17 datasets; designed a FAIR-inspired data pipeline and reframed the task as online continual learning and out-of-distribution(OOD) detection to mirror real-world deployment.
- Ran a comprehensive study with a CLIP-based animal search system, revealing a long-tailed per-trap accuracy distribution and the need for continual adaptation; distilled open challenges and practical guidelines.

Experience

Buckeye Autodrive, The Ohio State University – Columbus, OH — Aug 2024 – Present
Core Perception Developer

- Developed 2D / 3D detection modules in a pipeline operating with Robot Operating System (ROS).
- Developed a SLAM pipeline for robust perception system

Skills

- *Programming Languages*: Python, C++, Java
- *Software*: PyTorch, CUDA, ROS, Linux, UNIX, MVC model, Junit debugging, and Git.
- *Languages*: Fluent in Chinese, English.