

# Han Wang

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## EDUCATION

**Zhejiang University, Hang Zhou, China**  
*Undergraduate in Electronic and Information Engineering*

Sept. 2020 – Jun. 2024  
GPA: 3.94/4.00

## RESEARCH INTERESTS

Explainable, Robust, and Reliable AI, Computer Vision, Multi-Modality, Large Language Model

## RESEARCH EXPERIENCE

**Graph-Theoretical Understanding for OOD Generalization and Detection** May 2023 – Oct. 2023  
*Advisor: Asst. Prof. Sharon Yixuan Li, University of Wisconsin-Madison* *Under Review*

- Propose a novel graph-theoretical framework for understanding both OOD generalization and detection
- Present theoretical insight by analyzing closed-form solutions for the OOD generalization and detection error
- Evaluate the performance through a set of experiments and provide empirical evidence of robustness and alignment with our theoretical analysis

**Disentangling MAE for Unsupervised Domain Generalization** Oct. 2022 – May 2023  
*Advisor: Prof. Tat-Seng Chua, National University of Singapore, NExT++ Lab* *Under Review*

- Devise a disentangling MAE framework to discover the disentangled representations that faithfully reveal the intrinsic features and superficial variations in an unsupervised manner
- Demonstrate the effectiveness beyond state-of-the-art unsupervised domain generalization methods and domain generalization methods

**Test-time Training for Text-video Retrieval** Jan. 2023 – May 2023  
*Advisor: Prof. Fei Wu, Zhejiang University, DCD Lab*

- Pioneer the exploration for the test-time training in the context of text-video retrieval and present a large-scale cross-domain dataset tailored for this task
- Propose the Counterfactual Hierarchical Re-balancing module and the Causal Bias Correction module

**Weakly-supervised Spatio-temporal Video Grounding** Jun. 2022 – Dec. 2022  
*Advisor: Prof. Fei Wu, Zhejiang University, DCD Lab* *CVPR 2023*

- Present hierarchical video language decomposition and alignment to alleviate the spurious correlation brought by limited annotations
- Introduce a framework that encapsulates the structural attention and top-down backtracking for hierarchical understanding, and the multi-hierarchy intra-sample correspondence and inter-sample contrastive learning
- Outperform state-of-the-art weakly supervised methods, even surpass some supervised methods

## PUBLICATIONS & MANUSCRIPTS

- **Han Wang**, Yixuan Li. A Graph-Theoretic Framework for Joint OOD Generalization and Detection. *Submitted to International Conference on Learning Representations (ICLR), 2024. Under review.*
- An Zhang\*, **Han Wang\***, Xiang Wang, Wei Ji, Yicong Li, Tat-Seng Chua. Disentangling Masked Autoencoders for Unsupervised Domain Generalization. *Submitted to Association for the Advancement of Artificial Intelligence (AAAI), 2024. Under review.*
- Mengze Li\*, **Han Wang\***, Wenqiao Zhang, Jiaxu Miao, Wei Ji, Zhou Zhao, Shengyu Zhang, Fei Wu. Winner: weakly-supervised hierarchical decomposition and alignment for spatio-temporal video grounding. *In Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2023.*

## PROJECTS

**Automatic Detection System for Illegal Riding** Apr. 2021 – Nov. 2021  
*Regulating illegal cycling on non-motorized lanes at Zhejiang University* *Zhejiang University*

- Use OpenPoses library to locate the position of joints and gradient boosting decision tree to classify whether the person cycles illegally

## HONORS

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| The First-Class Scholarship for Outstanding Student, Zhejiang University (Top 3%)  | Oct. 2021 |
| The Second-Class Scholarship for Outstanding Student, Zhejiang University (Top 5%) | Oct. 2022 |
| Zhejiang Province Government Scholarship (Top 10%)                                 | Nov. 2022 |

## CORE COURSES

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### Major GPA 4.0/4.0

- **Mathematics:** Calculus (A), Linear Algebra, Probability and Mathematical Statistics, Complex Variable Functions and Integral Transformation, Partial Differential Equations, Information Theory and Coding
- **CS:** Fundamentals of Data Structures, Object-Oriented Programming, Computer Organization and Design, Computer Network and Communication
- **EE:** Electric Circuit and Electronic Technology, Signal Analysis and Processing, Engineering Electromagnetic Fields and Waves, Power Electronics, Principles of Automatic Control (B)

## SKILLS

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**Programming Skills:** Python, C/C++, Matlab, CUDA, VHDL/Verilog

**Language Skills:** Chinese (Native), English (Fluent, TOEFL iBT 100/120)