# Zhang Boxuan

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## RESEARCH INTEREST

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|---|---|
| **Machine Learning** | Trustworthy Machine Learning, Active Learning |
| **Foundation Model** | LLM Reasoning, Vision-Language Model, AI Safety |
| **Computer Vision** | Object Detection, Remote Sensing Image Interpretation |

## EDUCATION

**Wuhan University**  **Wuhan, CHN**
*M.E. in Artificial Intelligence*  *Sept. 2022 - June 2024*

– Overall GPA: 92.08/100 (**Top 10%**)

**Wuhan University**  **Wuhan, CHN**
*B.E. in Computer Science and Technology*  *Sept. 2018 - June 2022*

– Overall GPA: 3.6/4.0

## RESEARCH EXPERIENCE

**TMLR Group, HongKong Baptist University**  **HongKong, CHN**
*Research Intern, Advisor: Prof. Bo Han*  *Nov. 2023 - May. 2024*

○ Research on *Out-of-Distribution (OOD) Detection for Trustworthy Machine Learning.*

○ Propose a novel perspective to employ different common corruptions on the input space to expand the representation dimension for OOD detection. With the expectation among multiple input dimension, our method performs a better ID-OOD separability.

○ Submit one paper as 1st author to NeurIPS 2024 (under review).

**Department of Civil Engineering, Wuhan University**  **Wuhan, CHN**
*Research Intern, Advisor: Prof. Xiaoping Zhang*  *Aug. 2023 - Oct. 2023*

○ Research on *Machine Learning for Tunnel Boring Machines(TBMs) Excavation.*

○ Work on rock mass accurate classification based on multi-algorithm cross multi-feature optimization selection and TBM parameter efficient prediction using low-dimensional inputs. This helps TBMs to perceive geological conditions in advance and study the optimal operational parameters under geological variations.

○ Win the third place in The Second China TBM Excavation Parameter Data Sharing and Machine Learning Competition.

○ The code is publicly available at: github.com/ZBox1005/TBM-Competition

**Sensing IntelliGence and MAchine learning(SIGMA) Lab, Wuhan University**  **Wuhan, CHN**
*Research Assistant, Advisor: Prof. Zengmao Wang and Prof. Bo Du*  *Nov. 2022 - Aug. 2023*

○ Research on *Active Learning for Semi-Supervised Object Detection in Remote Sensing Images.*

○ Propose to boost semi-supervised object detection with active teaching (SSOD-AT) in remote sensing images. SSOD-AT can achieve high detection accuracy only with limited labeled samples, which helps to alleviate the dependency on limited labeled images in remote sensing scenarios.

○ Submit one paper to IEEE Geoscience and Remote Sensing Letters (GRSL) and get accepted.

○ The code is publicly available at: github.com/ZBox1005/SSOD-AT

**Sensing IntelliGence and MAchine learning(SIGMA) Lab, Wuhan University**  **Wuhan, CHN**
*Research Assistant, Advisor: Prof. Zengmao Wang*  *Feb. 2023 - April 2023*

- Research on *Self-Supervised Techniques for Intelligent Image Annotation.*
- Propose a self-supervised pre-training method assisted by image and object collaboration to address the low discriminative ability of self-supervised models to extract features.
- Help apply for the Hubei Provincial Technology Innovation Program aimed at "smart city" and "smart healthcare", collaborating with Hubei People's Hospital and Wuhan Zhongzhi Digital Technology Company.

**National Engineering Research Center for Multimedia Software, Wuhan University**        **Wuhan, CHN**
*Undergraduate Research Assistant, Advisor: Prof. Jing Xiao*        *Jan. 2022 - May 2022*

- Research on *Semantic Segmentation for Open Set Domain Adaptation* (Undergraduate Thesis)
- Propose a feature alignment method using a cross bilateral filter and depth-based warping to help the segmentation model better migrate between open domains (e.g. daytime scene to nighttime scene).
- Defend the undergraduate thesis and get excellent rating.

## PUBLICATIONS

(* Indicates Equal Contribution)

- **What If the Input is Expanded in OOD Detection**
  **Boxuan, Zhang\***, Jianing Zhu\*, Zengmao Wang, Tongliang Liu, Bo Du, and Bo Han
  *Preprint* (*Under Review*), 2024.
- **Boosting Semi-Supervised Object Detection in Remote Sensing Images with Active Teaching**
  **Boxuan, Zhang**, Zengmao Wang, and Bo Du
  *IEEE Geoscience and Remote Sensing Letters*, 2024.

## AWARDS AND HONORS

- Outstanding Communist Party and Youth League member, Wuhan University, April 2024
- Third Prize Winner in The Second TBM Excavation Machine Learning Competition, Oct. 2023.

## SELECTED COURSES

- **Postgraduate**
  Machine Learning in Computer Vision (96), Machine Learning (92), Advanced Algorithm Design and Analysis (90), Mathematical Models and Optimization (93)
- **Undergraduate**
  Multimedia Technology (95), Advanced Mathematics(92), Computer Graphics(87), Principles of Compiler(95), Computer Networks(91), Embedded System (91), Database Systems(93)

## KEY SKILLS

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|---|---|
| **Programming** | Python, Pytorch, LaTex, JavaScript |
| **Languages** | Chinese, English (IELTS: 7.0) |

## REFERENCES

- **Prof. Zengmao Wang**
  Associate Professor, School of Computer Science
  Wuhan University, Wuhan, CHN
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- **Prof. Bo Du**
  Dean Professor, School of Computer Science
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- **Prof. Bo Han**
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