Zhaoyang Chu

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Education

Huazhong University of Science and Technology (Advised by Prof. Yao Wan) GPA: 3.53/4.0
M.E. in Computer Science and Technology *2022 – 2025*

Huazhong Agricultural University GPA: **3.93**/4.0
*B.E. in Data Science and Big Data Technology (**Graduated with Honors**)* *2018 – 2022*

Publications

[1] Graph Neural Networks for Vulnerability Detection: A Counterfactual Explanation.
Zhaoyang Chu, Yao Wan*, Qian Li, Yang Wu, Hongyu Zhang, Yulei Sui, Guandong Xu, Hai Jin.
ISSTA 2024. *The ACM SIGSOFT International Symposium on Software Testing and Analysis.*

[2] Hierarchical Graph Representation Learning for the Prediction of Drug-Target Binding Affinity.
Zhaoyang Chu, Feng Huang, Haitao Fu, Yuan Quan, Xionghui Zhou, Shichao Liu, Wen Zhang*.
Information Sciences (Impact Factor 8.1), 2022.

Research Projects

*My research interest focuses on the intersection of **software engineering** and **machine learning**, aimed at building trustworthy and reliable AI-driven software systems.*

Counterfactual Reasoning for GNN-based Vulnerability Detection *Apr. 2023 – Dec. 2023*
- Reformulate the problem of explainability in vulnerability detection from a what-if analysis view.
- Generate counterfactual explanation by identifying a minimal perturbation to the input code graph that would alter the detection system's decision, thus discovering the root cause of the vulnerability.
- Accepted by **ISSTA 2024**, First Author, co-advised by Prof. Qian Li at Curtin University and Prof. Hongyu Zhang at Chongqing University.

Machine Unlearning for Code LLMs *Sep. 2023 – Now*
- Propose a gradient-based machine unlearning approach to make code LLMs forget specific sensitive information quickly without requiring retraining them from scratch.
- Submitted to **ICSE 2025**, First Author, co-advised by Prof. Zhikun Zhang at Stanford.

Exploring LLMs as Evaluator for Code Summarization *Sep. 2023 – Now*
- Explore an LLM-based evaluator that employs a role-player prompting strategy to assess the quality of generated code summaries without references.
- Submitted to **ICSE 2025**, Co-Author, collaborated with Prof. Yulei Sui at UNSW.

Learning-based Pre-trained Code Model Selection for Reuse *Sep. 2023 – Now*
- Develop learning-based methods for efficiently selecting and reusing pre-trained code models for target software engineering tasks within a limited computational budget.
- Submitted to **TSE**, Co-Author, collaborated with Prof. Hai Jin at HUST.

NaturalCC: An Open-Source Toolkit for Code Intelligence *Sep. 2022 – Now*
- Main Contributor: Responsible for enhancing compatibility with Transformers and supporting popular code LLMs like Code Llama, CodeT5, CodeGen, and StarCoder from Hugging Face.

Hierarchical GNNs for Drug-Target Binding Affinity Prediction *Sep. 2020 – Sep. 2022*
- Build a hierarchical GNN model to integrate the coarse- and fine-level information from an affinity graph and drug/target molecule graphs, respectively, in a well-designed coarse-to-fine manner.
- Published in **Information Sciences**, First Author, advised by Prof. Wen Zhang at HZAU.

Honors & Awards

Merit Postgraduate, First-class Scholarship for Postgraduates 2022 – 2023
National Scholarship for Undergraduates, Merit Student, Outstanding Undergraduate 2018 – 2022