Yuhao Zhang

(608) 236-3965 · yuhaoz@cs.wisc.edu · www.linkedin.com/in/yuhaoz · https://github.com/ForeverZyh

EDUCATION

University of Wisconsin-Madison Aug 2019 - Present
PhD Student in Computer Science, GPA: 3.94 Madison, WI

Peking University Sept 2015 - Jul 2019
B.S. in Computer Science and Technology, Summa Cum Laude, Outstanding Undergraduate Student Beijing, CN

PUBLICATIONS

Yuhao Zhang, Aws Albarghouthi, Loris D'Antoni "Certified Robustness to Programmable Transformations in LSTMs" in *Proceedings of the 2021 Conference on Empirical Methods in Natural Language Processing (**EMNLP** 2021)*, Online and Punta Cana, Dominican Republic

Yuhao Zhang, Luyao Ren, Liqian Chen, Yingfei Xiong, Shing-Chi Cheung, Tao Xie, "Detecting Numerical Bugs in Neural Network Architectures" in *Proceedings of the ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (**ESEC/FSE** 2020)*, Online, United States.

Yuhao Zhang, Aws Albarghouthi, Loris D'Antoni "Robustness to Programmable String Transformations via Augmented Abstract Training" in *Proceedings of the Thirty-seventh International Conference on Machine Learning (**ICML** 2020)*, Online, Austria

Yuhao Zhang, Yifan Chen, Shing-Chi Cheung, Yingfei Xiong, and Lu Zhang, "An Empirical Study on TensorFlow Program Bugs" in *Proceedings of the 27th ACM SIGSOFT International Symposium on Software Testing and Analysis (**ISSTA** 2018)*, Amsterdam, Netherlands

SKILLS

Languages C++, C, C#, Python, OCaml, Rust, Scheme, Java, JavaScript, HTML, CSS, PHP, Verilog
Technologies Git, TensorFlow, Keras, Pytorch, LLVM, MySQL

PROFESSIONAL EXPERIENCE

Microsoft May 2021 - Aug 2021
Research Intern - PROSE (Programming by Examples and Natural Language) Team [C#/Python] Remote

· Worked on the Blue-Pencil project, the main technology behind **Visual Studio IntelliCode Suggestions**.
· Designed the representation, temporal edit templates for storing thousands of mined edit sequence patterns.
· Implemented the framework that learned hundreds of temporal edit templates and achieved 30% precision.
· Generated a dataset that helped other researchers to conduct future research on the learned temporal edit templates.

Microsoft Research Asia Sept 2018 - March 2019
Development Intern - DKI (Data, Knowledge, Intelligence) Group [C#/Python] Beijing, CN

· Worked on **Ideas**, a plugin in Excel, which analyzes and provides high-level visual summaries for data analysts.
· Improved the classification accuracy of the intermediary model from 88% to 93% for six primary languages.
· Accelerated 4X column headers' matching speed with target phrases by implementing the Aho–Corasick algorithm.
· Tuned the hyperparameters of models by implementing a grid search algorithm, which is used by other groups.
· Won the **Award of Excellence** during the internship.

PROJECTS

Forward-mode Automatic Differentiation (AD) for Angora Fuzzer Feb 2020 - May 2020
Forward-mode AD computes more precise partial derivatives than the counterpart in Angora [C++/LLVM/Rust]

· Implemented an `Int` class to compute partial derivatives while keeping the original semantics of primitive int types.
· Instrumented the intermediate representation to surrogate the primitive int types with the `Int` class using LLVM.
· Registered new trace functions in compiled binary for communicating with Angora Fuzzer by proxy calls.

Course Scheduling System for Peking University Sept 2017 - May 2018
Course schedules generated by our system outperformed the dean's design on three metrics [Python/C++]

· Cleaned data and mined rules in raw data provided by the dean containing 529 majors in 39 departments.
· Designed a simulated annealing algorithm to solve thousands classroom conflicts and smooth the course density.
· Pipelined the components: data preprocessing, tabu search, simulated annealing, and generating course schedules.

PKURUNNER Application Apr 2016 - Jun 2018

The Android application is used by more than 2000 students for recording their running traces [Java]

· Implemented the GUI showing the map, the current location, the running trace, and metrics like running speed.
· Designed and implemented the logics interacting with the users to start, pause, and stop running.
· Invoked Gaode Maps APIs to get the GPS locations of the user and packed the trace for uploading to the server.

HONORS AND AWARDS

Research

· ACM Distinguished Paper Award at ESEC/FSE 2020

ACM-ICPC

· Asia Pacific Region: Ho-Chi-Minh City Regional **4th place**, 2017; Yangon Regional **7th place**, 2016.
· Asia East Continent Region: Xi'an Regional **Gold**, 2017; Dalian Regional **Gold**, 2016; Hefei Regional **Gold**, 2015.

Scholarships

· SenseTime Scholarship 2019; Suzhou Industrial Park Scholarship 2018; Schlumberger Scholarship 2017; iPinYou Scholarship 2016

SERVICE

FoMLAS 21, Program Committee
CAV 21, Artifact Evaluation Committee
ICML 21, Reviewer