

Yuhao Zhang

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EDUCATION

University of Wisconsin-Madison Aug 2019 - Present
PhD Student in Computer Science, GPA: 3.9 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, 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 Tensor-Flow 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 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