Yanze Li

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RESEARCH INTERESTS

My research interests lie in programming language design and implementation, program analysis, verification, and synthesis. I'm particularly enthusiastic about how we can exploit programming languages (such as their type systems) to facilitate verification or synthesis tasks and apply them to real-world systems.

EDUCATION

M.S.	Computer Science, Texas A&M University, 2020 *Thesis: Efficient and Scalable Whole Program Race Detection for Java and Android Programs* *Advisor: Jeff Huang* GPA: 4.0/4.0
B.Eng.	Electrical Engineering, Huazhong University of Science and Technology, 2017 GPA: 3.67/4.0 Major GPA: 3.81/4.0

PUBLICATIONS

SC'20 *"OMPRacer: A Scalable and Precise Static Race Detector for OpenMP Programs"*
Bradley Swain, **Yanze Li**, Peiming Liu, Ignacio Laguna, Giorgis Georgakoudis, Jeff Huang
Proceedings of the International Conference for High Performance Computing, Networking, Storage and Analysis. 2020.

ICSE'19 (Demo Track) *"SWORD: A Scalable Whole Program Race Detector for Java"*
Yanze Li, Bozhen Liu, Jeff Huang
2019 IEEE/ACM 41st International Conference on Software Engineering: Companion Proceedings (ICSE-Companion). IEEE, 2019.

RESEARCH EXPERIENCE

2020.8- **Research Intern (Remote), Utrecht University, Netherland**
Working with Dr. Jurriaan Hage on a Haskell compiler called Helium. Implementing its LLVM backend and FFI.

2018.6- 2020.6 **Research Assistant, Texas A&M University, USA**
Worked on static analysis for concurrent programs. Developed tools that scale to million lines of Java/C++/Android code and efficiently detect potential data races and deadlocks.

WORK EXPERIENCE

2019.7- **Software Engineer, Coderrect Inc., USA**
Working as the main developer of an LLVM-based program analysis tool for detecting concurrency bugs and anti-patterns in C/C++/Fortran/CUDA code. I've designed a highly efficient static happens-before graph, lock tracking algorithm and race detection algorithm which enable the tool to analyze million lines of code in minutes accurately.

2015.11- 2017.4 **Software Engineer, Nightingale Technology, China**
Worked on a second-hand commodities trading platform for college students and an integrated web application for editing and publishing news articles as well as managing and visualizing their statistics.

PROJECTS

Helium (Ongoing) A compiler for a subset of Haskell that aims at delivering high quality type error messages particularly for beginner programmers. It also includes facilities for specializing type error diagnosis for embedded domain specific languages.

Coderrect (Ongoing) An LLVM-based static analyzer, specialize in detecting concurrency related bugs and anti-patterns, found several previously unkown bugs in Linux kernel, Redis, memcached, and GraphBLAS.

OMPRacer An LLVM-based race detector for OpenMP programs, using inter-procedure value-flow analysis to reason about array accesses. Found several previously unknown bugs in ECP proxy applications and a major simulator for COVID-19.

Crappie An incremental race detection engine that scales to distributed systems and Android apps and has been implemented as an Intellij IDEA plugin.

SWORD A whole program race detector for Java (source code/bytecode) and has been implemented as a Eclipse plugin.

HONOR AND AWARDS

2019	ACM SIGSOFT CAPS Award
2017	Excellent Graduated Student at HUST
2015	Scientific Research Innovation Scholarship
2014	3rd place, China University Cloud Computing Innovation Competition

SERVICE

2020.8- Volunteer for SIGPLAN PL Mentorship Program

Sub-Reviewer

2020	OOPSLA
2019	PLDI, ICSE, FSE, OOPSLA
2018	TSE