Yao Li

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Research Interests

I am generally interested in improving programmers' productivity by building techniques to help them *conveniently* build *reliable* systems from the *programming language* level:

- More flexible and more convenient type system without compromising type safety.
- New paradigms that will benefit programming and debugging in domains such as parallel/concurrent programming.
- Meta-programming or multi-stage programming techniques.
- Compiler optimization techniques (especially optimizations for new programming paradigms).
- Verification/Analysis/Profiling techniques.

Education

2013-2016 (expected) Master of Science in Engineering,
Software Engineering, Shanghai Jiao Tong University

2009-2013 Bachelor of Science in Engineering,
Software Engineering, Shanghai Jiao Tong University

Publication

- **ScalaHDL: Express and Test Hardware Designs in a Scala DSL**
  by **Yao Li**, Antonio R. Lopes, Zhouyun Xu, Zhengwei Qi, and Haibing Guan,
  32nd IEEE International Conference on Computer Design *(ICCD)*, 2014

- **AutoBench: Finding Workloads That You Need Using Pluggable Hybrid Analyses**
  by Yudi Zheng, Andrea Rosa, Luca Salucci, **Yao Li**, Haiyang Sun, Lubomir Bulej,
  Lydia Y. Chen, Zhengwei Qi, and Walter Binder
  23rd IEEE International Conference on Software Analysis, Evolution, and Reengineering *(SANER)*, 2016

Drafts

- **How Can Hardware Designers Benefit from Scala?**
  by Yanqiang Liu, **Yao Li**, Weilun Xiong, Antonio R. Lopes, Zhengwei Qi, and Haibing Guan
  (submitted to DAC 2016)

Projects

- **ScalaHDL: From High-Level Scala to Low-Level FPGA**
  - This is a joint research and development project between Morgan Stanley and our lab.
  - I was the major contributor to this project. Now I am mentoring other graduate and undergraduate students in our lab to continue working on this project.
  - We have published a paper in ICCD 2014. And we have another paper describing our latest improvement, including stronger type-safety and better modularity, which is currently under review.
- **Scala Forklift: Type-safe Data Migration Tool for Slick, Git and Beyond**
  https://github.com/lastland/scala-forklift
  - Working closely with my mentor Jan Christopher Vogt, one of Slick's major contributors, I developed his idea into a production-ready tool. And together we have also developed an experimental tool to make this tool work with git branches.
  - In October we released an alpha version of this tool as an open-source software. I will be still developing and maintaining it as a hobby project.
- **AutoBench: Finding Workloads That You Need Using Pluggable Hybrid Analyses**
  - I developed a framework for repository crawling and workload filtering based on static and dynamic analysis. This framework was then used as the foundations of this project.
  - The paper on our discoveries using this framework is under review by SANER 2016.

Honors & Awards

- China National Scholarship *(the scholarship with highest honor and reward)*, 2014
- Outstanding Graduate of Shanghai Jiao Tong University, 2013
- China National Scholarship *(the scholarship with highest honor and reward)*, 2012
- Most Popular Collegiate Innovation Projects of Shanghai Jiao Tong University, 2012
- 1st Prize in the 4th Intel Cup National Collegiate Software Innovation Contest in China, 2011
- 1st Prize in National Olympiad in Informatics in Provinces, 2008
- 1st Prize in National Olympiad in Informatics in Provinces, 2007

Experiences

July 2012 - Sep 2012 Microsoft, Shanghai, China
Software Development Engineer Intern

I worked in the infrastructure team led by Zhiliang Xu in the Commerce Department. I was responsible for investigating how Windows Azure could benefit our existing system, and helping transfer and migrate a project from Redmond to our team. I've also independently developed a web application which help users view their Azure storage more conveniently.

Sep 2013 - Jan 2014 Shanghai Jiao Tong University, Shanghai, China
Teaching Assistant

I acted as the teaching assistant of course Programming and Data Structures for undergraduate students.

Mar 2015 - July 2015 Universita della Svizzera italiana, Lugano, Switzerland
Research Assistant

I worked with Prof. Walter Binder and his dynamic analysis group the AutoBench project. More details can be found in the projects section.