

Fengmin Zhu

Master Student,
Software Engineering

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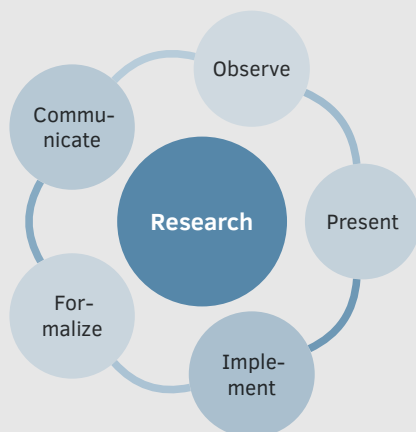
Social Network

- paulzfm
- @Paul_Zhu

Languages

- Chinese
- English
- Japanese
- French
- German

Research Skills



Education

- 2012 – 2017 **Bachelor** Tsinghua University
Computer Science & Technology.
Thesis title: Synthesizing Dynamic Programming Codes from Recursive Functions.
- 2017 – now **Master** Tsinghua University
Software Engineering. Supervised by Fei He.
Research topics: program synthesis, software merge, program repair. Estimated graduation time: Jul 2020.

Publications

- 2018 **Conflict Resolution for Structured Merge via Version Space Algebra**
Fengmin Zhu, Fei He
Synthesizing candidate resolutions which form a version space and rank them. In OOPSLA'18.
- 2019 **Enhancing Precision of Structured Merge by Proper Tree Matching**
Fengmin Zhu, Fei He, Qianshan Yu
Reducing unnecessary conflicts by introducing a novel quality function of matchings. In ICSE'19 poster track.

Awards

- 2015 & 2016 Meritorious Winner of Mathematical Contest in Modeling COMAP
- 2017 Scholarship: Academic Progress Award Tsinghua University
- 2019 Scholarship: Comprehensive First Prize Gridsum & Tsinghua University

Working Experience

- 2016 **Internship** Tencent Computer Systems Company, Shenzhen, China
Software developer. I worked on an online document cooperation system, based upon operational transformation.

Teaching Assistant

- 2017 & 2018 Fall **Principles of Compilation**
I managed two programming assignments: LL(1) parsing and data-flow analysis. I also developed a little LL(1) parser generator for assignment use.
- 2018 Spring **Operating Systems**
I was in charge of a programming assignment and proposed exam problems.
- 2019 Spring **Functional Programming (Haskell)**
I updated lecture slides (and notes) and proposed the final project. I also gave two weeks' courses on λ -calculus.
- 2019 Spring **Modeling and Verification of Software Systems I**
I mostly added a couple of exercise problems related to semantics and Dafny. I also gave tutors in TA sessions.

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About Me

I am a master student of software engineering in the Tsinghua formal verification group. Although my topics were concentrated on program synthesis and software engineering, I favor most the theoretical aspects of programming languages (PL). Why PL? It's fun – the problems, methods, concepts and conclusions! It's practical – impacts the design of many industry languages, and also the paradigm of software development.

Technical Skills

Java, Scala

L^AT_EX

Python, Javascript, Ruby

Haskell, Standard ML, Ocaml

C, C++

Coq

C#, F#

Racket, Prolog

Node.js, Django

Memberships



China Computer Federation, Student member



Tsinghua University
TUNA Association
(about network & open source)

Summer School

2017

HSSCPS

Halmstad University, Sweden

Summer school on Cyber physical systems (CPS). Interesting talks on logical foundations, modeling, languages and industry applications of CPS, with unforgettable activities – karting and hiking.

2018

SSFM

Chinese Academy of Sciences & CONFESTA

Summer school on formal methods. Excellent tutorials on probabilistic programming, concurrent programming, verification of cryptographic programs, and foundations & applications of CPS.

Research Interests

• Programming Languages

- Type systems (e.g. dependant types, refinement types)
- Foundations of languages (e.g. Scala, Dotty, Rust)
- Program synthesis (e.g. programming by examples, sketch-based synthesis)
- Probabilistic programming

• Software Engineering

- Three-way merge (in particular structured merge)
- Automated program repair
- Repository mining

• Compiler-related

- Parsing (in particular parser combinators and layout-sensitive parsing)
- Compiler construction (for fun and for education)

Selected Talks & Projects

2018

Conflict Resolution for Structured Merge via Version Space Algebra

OOPSLA'18 & YR-FMAC'18 [AutoMerge project]

Synthesizing candidate resolutions which form a version space and rank them.

2019

Maybe, it's a Monad!

Tunight (held by TUNA) [link]

Monads in functional programming and also in category theory.

2019

Parsing from Scratch

Tunight [link]

Parser generators, parser combinators and new progress.

2016

Sudoku BMC

Course project [repo]

A sudoku solver based on NuSMV bounded model checker.

2017

logico

Toy language [repo]

A tiny logical programming language similar to Prolog.

July 14, 2019

Fengmin Zhu