ZITENG YANG

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EDUCATION

Georgia Institute of Technology, Atlanta, GA, USA   Aug. 2021 – Present

Ph.D. student in Computer Science, School of Computer Science, College of Computing

- Advised by Vivek Sarkar
- Research Interests: programm analysis & verification, parallel program

Shanghai Jiao Tong University (SJTU), Shanghai, China   Sept. 2017 – Jul. 2021

B.E. in Computer Science and Technology, Department of Computer Science and Engineering

- Selected Courses: Programming Languages (98), Computing Theory (91), Project Workshop of Operating System (100), Linux Kernel (91)

PUBLICATIONS

- **Z. Yang**, X. Yin and S. Li. "Maximally permissive supervisor control of timed discrete-event systems under partial observation," in 21st IFAC World Congress, 2020

Submitted

- **[*Co-first author, dictionary order]** Qinxiang Cao*, Hanzhi Liu*, Xiwei Wu*, **Ziteng Yang***, Shuyang Tang, Yiping Wong, Shushu Wu, Verification-aided Compiler Optimization

RESEARCH PROJECTS

Verification-aided Compiler Optimization in the CompCert Compiler   Apr. 2020 – Jun. 2021

Research Assistant   Advisor: *Qinxiang Cao*, John Hopcroft Center for Computer Science, SJTU.

An expedition to implement compiler optimization using verification code of a program:

- Designed a semantics framework based on small step semantics in CompCert Certified Compiler, aiming for verifying new compiler optimization methods for certified program using hints of Hoare Logic assertions
- Designed and proved the correctness of the verification routine of backward simulation relation as well as the preservation of annotation's consistency between source and compiled program for the newly proposed optimization method
- Implemented the routine as a framework for CompCert's Clight intermideate language.

Finite Canonical Model for Completeness Theory in Coq   Nov. 2019 – Apr. 2020

Research Assistant   Advisor: *Qinxiang Cao*, John Hopcroft Center for Computer Science, SJTU.

A work for extension of a logic library in Coq from infinite method to finite method:

- Formally proved Formalized Propositional Dynamic Logic (PDL)'s completeness theories in Coq using the method of finite canonical model which is distinctive from any previously formalized logics in this library

Supervisor Control Theory of Timed Discrete-Event Systems   Aug. 2018 – Oct. 2019

Research Assistant   Advisor: *Xiang Yin*, Department of Automation, SJTU.

Field: Formal methods in Automata & Control Theory

- Proposed a method for synthesizing a safe and maximally-permissive supervisor for Timed Discrete Event System (TDES, a finite-automata-style model) which models time into conventional automata;
- Formally proved the correctness of such method, i.e. the closed-loop language which depicts the behavior of the system under the synthesized supervisor is within a safe specification language

TEACHING EXPERIENCE

Teaching Assistant, MA208: Discrete Mathematics, SJTU, lectured by *Qinxiang Cao*   2020 Fall
Teaching Assistant, MA239: Discrete Mathematics (Honor), SJTU, lectured by *Xiang Yin*   2020 Fall

Course Projects (Selected)

Interpreter for "SimPL" Programming Language   2020 Spring

- Implemented an interpreter in Java following given semantic specification of simplified dialect of ML
- Realized type checking (including let-polymorphism) and evaluation

Naive Airdrop   2019 Fall

- Designed a file synchronizing application from Android phone to PC within local area network with encryption in transfer, auto connection, changes detecting etc.

Honors and Awards

- Rongchang Scholarship for Science and Technology Innovation, Finalist, 10,000 CNY (30 persons school-wide including 10 winning 30,000 CNY per year;)   2020
- Undergraduate Excellent Scholarship, 500 CNY Third-class   2018
- 1st Prize in National High School Mathematics League in Provinces   2016

Skills

Programming Experiences:

- **Coq**: long-term research projects
- **C/C++**: course projects (OS kernel, standard templete library, algorithm)
- **Java**: Android & Windows applications
- **Python**: course projects (machine learning)

Familiar Tools/Libraries:

- **SVF**: static tools with scalable and precise interprocedural dependence analysis for for C/C++;
- **VST**: Verified Software Tool-chian in Coq, a separation logic based tool to verify correctness of C programs

Languages:

- Native: Standard Mandarin, Sichuanese Mandarin
- Fluent: English