Ziteng Yang

✉ youngster@sjtu.edu.cn · ☎ (+86) 199-2189-0996 · ⌨ Youngzt998 · ⚲ youngzt998.github.io/

Education

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

B.E. in Computer Science and Engineering (CSE)

- GPA: overall 3.61 / 4.0 (1st year: 3.47; 2nd year: 3.61; 3rd year: 3.81)
- Selected Courses: Project Workshop of Operating System (100), Programming Languages (98), Computing Theory (91), Linux Kernel (91), Discrete Mathematics (92), Data Structures (93), Cloud Computing (92), Database System Technology (91), Linear Algebra (90) , Circuit Theory (90), Physics II (93)

Research Projects

Verification-aided Compiler Optimization   Jul. 2020 – Present

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

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

- Proposed a compiler optimization method of certified program from annotated assertions
- Designed a semantics framework extended from general small step semantics framework in CompCert Certified Compiler, aiming for verification of the proposed compiler optimization method
- Designed a "conditional forward / backward simulation" relation between the semantics of source and target program
- Formally proved crucial properties of such relation (e.g. vertical composition, derivation from semantics preservation to behaviour simulation)

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

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

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

- Formalized Propositional Dynamic Logic (PDL) as an example of logics with finite model property in proof assistant *Coq* based on the framework of mathematical logic library *UnifySL*, with efficient code reuse
- Formally proved crucial lemmas of proof theory, finite set, (finite) maximally consistent set of general logics etc. supplementing to *UnifySL* library
- Proved 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 of Timed Discrete-Event Systems   Sept. 2018 – Aug. 2019

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

Research field: formal methods in Automata Theory and Control Theory

- Proposed a method for synthesizing a safe and maximally-permissive supervisor for Timed Discrete Event System (TDES) which models time into conventional automaton, by applying a two-player game structure from recent breakthrough in non-timed setting
- Proved the correctness of such methods formally, i.e. the closed-loop language which depicts the behavior of the system under the synthesized supervisor is within a safe specification language
- Related paper was received by *IFAC World Congress 2020*, a top-tier conference of Automatic Control.

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

Teaching Experience

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

- Courses for the *Zhiyuan Honor Program* (for top 5% students selected from Engineering related majors)
- Responsible for exercise grading, tutorials (for exercises) teaching, office hours holding and Q&A writing

Teaching Assistant, MA208: Discrete Mathematics, SJTU, lectured by *Qinxiang Cao*   2020 Fall

- Courses for the *IEEE Honor Class* (for top 20% students selected from EECS)
- Responsible for office hours holding, Q&A writing

Course Projects (Selected)

Interpreter for "SimPL" Programming Language (Independent course project)   2020 Spring

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

Naive Airdrop (Independent project)   2019 Fall

- Designed a file synchronizing application from Android phone to PC within local area network
- Implemented auto connection, changes detecting of the observed files on client devices, encryption in transfer, both auto and manual transmission etc.

Linux (Android) Memory Management (Independent course project)   2019 Spring

- Implemented a system call for page table remaping
- Replaced the original page replacement algorithm by a new one in a given specification
- Wrote a detailed instruction (for beginner of OS kernel and its memory management investigation)

Re-implementation of deque and map in STL (Independent course project)   2018 Fall

- Re-implemented the *deque* and *map* template class in C++ Standard Template Library using Block List and AVL Tree
- Enabled the two type class to be used in the same way as the original ones in STL

Honors and Awards

- Rongchang Scholarship for Science and Technology Innovation (10 out of 4000; 30,000 CNY after oral defense)   Oct. 2020
- Undergraduate Excellent Scholarship, Third-class (Top 20%; 500 CNY)   Oct. 2018
- 1st Prize in National High School Mathematics League in Provinces   Sept. 2016

Skills

Programming:

- Skilled: Coq, C (including Linux kernel programming), C++, Python, Java
- Basic: TLA+, SQL
- Operating System: Linux, Windows
- Other Tools: Keras (in Python, for machine learning), Unreal Engine (for game design)

Languages:

- Mandarin (Native), English