

ZITENG YANG

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EDUCATION

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

B.S. 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)

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 new “conditional forward / backward simulation” relation between the semantics of source and target languages and formally proved crucial properties of such relation
- Implemented a translation path from annotated CompCert C source language to annotated RTL intermediate language

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

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

- Formalized Propositional Dynamic Logic (PDL) in proof assistant *Coq* based on the framework of mathematical logic library *UnifySL*, with efficient code reuse
- 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
- Supplemented a large set of useful lemmas (e.g. proof theory, finite set etc.) for *UnifySL* 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)
- Proved the correctness of our 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 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 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 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 remapping
- Replaced the original page replacement algorithm by a new one in a given specification
- Wrote a detailed instruction (for beginner of OS kernel investigation)

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

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

HONORS AND AWARDS

- Rongchang Scholarship for Science and Technology Innovation (nominated; 30,000 CNY after the oral defense) Oct. 2020
- Shanghai Jiao Tong University Third-class Scholarship (Top 30%, 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