

Yixuan Chen

curriculum vitae

+1 (734) 789 0357

✉ xlk@umich.edu

📖 blog.xlk.me

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Education

2017–2019 **Bachelor**, *Computer Science Engineering*, University of Michigan, 4.0.
Dual Degree Program

2015–2019 **Bachelor**, *Electrical and Computer Engineering*, Shanghai Jiaotong University, 3.6.

2012–2015 **High School**, Shanghai High School.

Research Interests

Formal Verification, programming languages, operating systems and applying formal methods in large and concurrent software systems

Research

May. – Aug. **Research intern**, *prof. Andrew Appel*, Princeton University.

2018 Designing and Verifying high performance KV-database implemented in C

- Using Verified Software Toolchain and Verifiable C to prove the functional correctness of C programs
- Cooperating with colleagues to design a high performance KV-database in light of MassTree and SQLite cursor

2017–2018 **Research assistant**, *prof. Manos Kapritsos*, University of Michigan.

Verification tool on concurrent programs

- Understanding and modifying the Dafny language and program verifier
- Researching automatic derivation of abstract syntax tree mappings to help establishing transformation correctness between programs

Academic Experience

Services

2018 Fall **Teaching Assistant**, *EECS 482 Operating Systems*, University of Michigan.

2016-2017 **Student Adviser**, *Advising Center of Joint Institute*, Shanghai Jiaotong University.

Events

2018 Jul. **Student participant**, *DSSS 2018*, Princeton, NJ.

DeepSpec Summer School 2018

2018 Jan. **Student participant**, *POPL 2018*, Los Angeles, CA.

Principles of Programming Languages 2018

Industrial Experience

- 2016–2017 **Intern, Apple Inc.**, Shanghai.
Designed monitoring and automation systems for the hardware test team
- o Developed concurrent software systems
 - o Cooperated with my team and reconciled the demands

Projects

- 2018 Winter **Course project, Fault-tolerant distributed chat server**, EECS 591.
Implemented chat server with replication that tolerates benign failures and unreliable channels
- o Understood **Paxos** and **multi-Paxos** algorithms and implemented in Python
 - o Dealt with non-deterministic bugs introduced by unreliable channels
- 2018 Winter **Course research project, On investigating mixer's impact on database performance**, EECS 591.
Identifying application-aware mixer's impact on the performance of database
- o Benchmarked the database performance with TPC-W datasets
 - o Reasoned about the database performance in terms of network, concurrency, database and application logic
- 2018 Winter **Course project, Compiler for COOL**, EECS 483.
Implemented a compiler for COOL programming language, written in OCaml and compiles COOL program into x86_64 assembly program
- o Implemented a full-stack from lexical analyzing to code generation
 - o Used intermediate language to achieve extensibility
 - o Generated assembly file that can be assembled into ELF file and directly executable on Linux
- 2018 Winter **Course project, Network file system**, EECS 482.
Implemented a file system featuring encryption, authentication, failure tolerance and concurrency
- o Designed fine-grained locking scheme for best concurrency performance
 - o Used shadowing to tolerate the failure during modification to the disk
- 2017 **Individual project, JOS**, MIT 6.828.
Followed MIT 6.828's labs, finished and implemented the JOS operating system
- o Developed operating system on x86 platform, featuring multi-core, paging, system calls and ELF compatibility
 - o Used GDB and QEMU to debug the operating system

Languages

- English Proficient, TOEFL: 106
Chinese Native speaker

Programming Languages

- Functional OCaml, Coq
Imperative C, C++, C#, Pascal
Scripting Python, Javascript, Shell (and variants)
Others Dafny, LaTeX, HTML/CSS, Verilog, Matlab, Mathematica