Zhiyi Pan

curriculum vitae

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PPER

Education

2019-2020 **Bachelor**, *Computer Science Engineering*, University of Michigan, *3.84*.
Dual Degree Program
Selected coursework: Advanced Compilers; Program Synthesis; Introduction to Operating Systems; Compiler Construction; Programming Languages

2017-2019 **Bachelor**, *Electrical and Computer Engineering*, Shanghai Jiaotong University, *3.55*.

Research Interests

Programming languages, compiler and software engineering

Research

Nov. 2019 - present **Research Assistant**, *prof. Cyrus Omar*, University of Michigan, Future of Programming Lab, Ann Arbor.
Programming Language
- Worked on a paper for a gradual bidirectional typing inference system - type hole inference.
- Developed undo/redo and history recording features for Hazel, a live functional programming environment featuring typed holes.
- Designed and implemented a history panel, which was used for EECS 490 teaching work in UM.

May 2020 - July 2020 **Research Assistant**, *prof. Scott Mahlke*, University of Michigan.
Compiler Optimization
- Learnt and wrote optimization path by LLVM.
- Implemented genetic algorithm to find optimized combination of flags for gcc.

Academic Experience

2020 Fall **Instructional Aide (IA)**, *EECS 490 Programming Languages*, University of Michigan.
- 100-student upper level technical elective course.
- Duties including holding office hours and lab teaching.

August 2020 **Author**, *ICFP 2020*, Student Research Competition Track.
Type Hole Inference
- Won bronze medal in the student research competition.
- Submitted an extended abstract, *Type Hole Inference*.
- Participated in the poster session and communicated with ICFPers.
- Made a presentation on the final talk session.

Projects

2019 Winter **Course Project**, *Compiler for Decaf*, EECS 483 Compiler Construction.

Implemented and optimized a compiler for Decaf (a strongly-typed, object-oriented language with support for inheritance and encapsulation), written in C++ and compiled Decaf program into MIPS assembly program.

- Implemented a full-stack compiler from lexical analyzing to code generation with clear static, link and run-time error reporting.
- Optimized compiler by register allocation improvement, dead code elimination, constant folding, subexpression elimination, constant propagation and forward copy propagation.

2019 Winter **Course Project**, *Network File System*, EECS 482 Operating System.

Implemented a file system featuring encryption, authentication, failure tolerance and concurrency.

February 2019 - May 2019 **Online Visual Novel**, *SJTU Network and Information Organization*, Shanghai.

Implemented a visual novel featuring multiple story lines and endings, shopping store, archiving, achievement, HP systems.

- Designed and built front-end pages (Html/Css/Js).
- Developed the back-end by Django, created database model and deployed it in the cloud server (Ubuntu).
- Revised it into a light framework and released on github.

Awards

August 2020 **Bronze**, *ICFP 2020 Student Research Competition*.

April 2019 **Champion**, *12th Annual VEX U Robot Skills Challenge World Championship*, The Robotics Education & Competition Foundation, Louisville.

Over 30,000 people including more than 1,650 teams from 40 nations participated.

- Designed and constructed over 5 versions of robots for competitions with other 8 teammates.
- Wrote daily work log and engineering sheets for the team.

April 2019 **Second Place**, *12th Annual VEX U Robot World Championship*, The Robotics Education & Competition Foundation, Louisville.

February 2019 **Champion**, *VEX Robotics Asia Open*, Ningbo, Zhejiang.

November 2018 **Robot Awards**, *Summer Design Expo Best Technology Award*, UM-SJTU JI, Shanghai.

Built a remote-controlled glass wall cleaning robot

2017-2018 **Scholarship**, *Undergraduate Excellent Scholarship*, Shanghai Jiao Tong University, Shanghai.

Programming Languages

Functional	OCaml, ReasonML
Imperative	C, C++
Scripting	Python, Javascript, Shell
Others	LaTeX, HTML/CSS, Matlab, Mathematica