

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

## Academic Experience

- 2020 Fall **Teaching assistant**, *EECS 490 Programming Languages*, University of Michigan.  
TBD!!!!!!!!!!!!
- 250-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.

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## Projects

- 2020 Fall **Course Project**, EECS 583 Advanced Compiler.  
TBD!!!!
- 2020 Fall **Course Research Project**, EECS 598 Program Synthesis: Techniques and Applications.  
TBD!!!!
- 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.
- o Implemented a full-stack compiler from lexical analyzing to code generation with clear static, link and run-time error reporting.
  - o 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 **Online Visual Novel**, *SJTU Network and Information Organization*, Shanghai.
- 2019 - May  
2019 Implemented a visual novel featuring multiple story lines and endings, shopping store, archiving, achievement, HP systems.
- o Designed and built front-end pages (Html/Css/Js).
  - o Developed the back-end by Django, created database model and deployed it in the cloud server (Ubuntu).
  - o Revised it into a light framework and released on github.

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## 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.
- o Designed and constructed over 5 versions of robots for competitions with other 8 teammates.
  - o 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

## ■ Languages

TBD!!!!