SIYUAN HE

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EDUCATION

- Master, Information Science, University of Michigan, 2019 to present
- Bachelor, Electrical and Computer Engineering, Shanghai Jiaotong University, 2016 to 2020

TECHNICAL SKILLS

- **Functional Programming:** ReasonML, OCaml
- **Formal Proof:** Coq
- **Programming:** C++, Python
- **AI & ML:** Pytorch, Keras, common CV and NLP models
- **Information Visualization:** Atair (Python), Julia, jsxgraph (js+html), Tableau
- **Low-level:** Verilog, Assembly
- **Documentation:** Latex (tikz)

RESEARCH EXPERIENCE

Hazel, Extraction to OCaml   **(Hazel: A live functional programming environment featuring typed holes)**
FPLab member, instruced by Cyrus Omar   *Oct. 2019 to present*

- Develop the extraction from Hazel AST to OCaml runnable code individually
- Formalize part of the extraction from statics to OCaml expressions

Formal verification of a pathway finding algorithm
Instructed by Jean-Baptiste Jeannin   *Oct. 2019 to July 2020*

- Design and implement the algorithm in Coq, a proof assistant
- Write and proof about half of theorems and lemmas
- Extract the algorithm to OCaml code and test on real cases
- The project leads to a publication, and code can be viewed in github repo

Verified Software Toolchain   **Detailed topic undecided now**
Instructed by William Mansky   *Aug. 2020 to present*

- Onboarding, learning VST now

SCHOOL EXPERIENCE

VE370, Computer Organization   **SJTU**
Teaching Assistant   *May. 2019 to Aug. 2019*

- Work as the only teaching assistant of VE370 and my duty includes giving recitation class.
- Implement a CPU pipeline in Verilog to support the MIPS instruction set
- Write assembly programs (about 200 lines)

WORK EXPERIENCE

Lenovo Research   **AI Lab**
Intern, Computer vision researcher   *Dec. 2017 to Feb. 2018*

- Develop a blur detection method and optimize the pre-processing efficiency
- Optimize the align performance and overall recall of the face recognition model

Nokia, Shanghai-Bell   **ION, 5G Core**
Intern, Data analysis   *May 2020 to Aug. 2020*

- Involved in smart street-lamp network project, complete all lab tests and find problems
- Involved in the design of frontend and backend of a smart education system
- Develop an automation program to take over manual work in daily form filling

COURSE PROJECTS

- 2020 - Assessing Humor in Edited News Head lines (NLP), course project & online competition
- 2019 - Searching Engine Specified on Games, course project
- 2019 - Website for CDMA visualization, and website for carbon pollution visualization
- 2019 - Multivariate Cryptography, course project

PUBLICATIONS

- First Author, *Verification of an Airport Taxiway Path-Finding Algorithm*, DASC 2020, coming soon

OTHER SKILLS

Art   Piano (with grade certificate). Chinese calligraphy (with awards). Micro-film director and screenplay writer.
Languages English: TOFEL 100. Chinese: native.