

SIYUAN HE

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EDUCATION

- Ph.D. in Computer Science, Purdue, advised by Tiark Rompf, from 2021.9
- Master in Information Science, University of Michigan, 2019.8 to 2021.4
- Bachelor in Electrical and Computer Engineering, Shanghai Jiaotong University, 2016.9 to 2020.8

TECHNICAL SKILLS

- **Functional Programming:** ReasonML, OCaml
- **Formal Proof:** Coq, VST
- **Programming:** C++, Python
- **AI & ML & Info:** Pytorch, Keras, experience on time series, NLP, CV, IR
- **Information Visualization:** Atair (Python), Julia, jsxgraph (js+html), Tableau
- **Low-level:** Verilog, Assembly

RESEARCH EXPERIENCE

Hazel, Extraction to OCaml

FPLab member, instructed by Prof. Cyrus Omar

Repo
2019.10 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 Prof. Jean-Baptiste Jeannin

Repo
2019.10 to 2020.10

- Design and implement the algorithm in Coq and formally verify the correctness
- Extract the algorithm to OCaml code and provide tests on real cases

DeepWeb (DeepSpec)

Instructed by Prof. William Mansky

2020.8 to present

- Make the DeepWeb concurrent, and currently working on the proofs

PUBLICATIONS & PAPER AWARDS

- First Author, *Verification of an Airport Taxiway Path-Finding Algorithm*, 2020 AIAA/IEEE 39th DASC (Best of Session).

TEACHING EXPERIENCE

- 2019 - VE370 Computer Organization in SJTU, Teaching Assistant

WORK EXPERIENCE

Lenovo Research (Beijing, China)

Research Intern, Computer vision researcher

AI Lab
2017.12 to 2018.2

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

Nokia, Shanghai-Bell (Shanghai, China)

Intern, Data analysis

ION, 5G Core
2020.5 to 2020.8

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

OTHER SELECTED PROJECTS

- 2021 - Temperature Forecasting, master capstone design
- 2021 - A tutorial on time series + machine learning, SI699 course
- 2020 - Anomaly Detection in Injection Molding, bachelor capstone design, supported by Foxconn
- 2020 - Assessing Humor in Edited News Head lines, SI671 course project & online competition
- 2020 - Analysis on the Factors Leading to High Suicide Rate, SI630 course project
- 2020 - Crawler and visualization of US massive shooting, SI507 course project
- 2019 - Searching Engine Specified on Games, SI650 course project
- 2019 - CDMA visualization tutorial website & website for carbon pollution, SI649 course project
- 2019 - Multivariate Cryptography, VE475 course project
- 2018 - MIPS CPU implementation using Verilog, VE370 course project
- 2018 - A Clustering Method Based on Repulsion and Potential, VE488 course project and extended research

OTHER SKILLS

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