WENJI FANG

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EDUCATION

The Hong Kong University of Science and Technology (Guangzhou) 2022 – Present

M.Phil. in Microelectronics, supervised by Prof. Hongce Zhang and Prof. Zhiyao Xie

Nanjing University of Aeronautics and Astronautics 2017 – 2021

B.Eng. in Electrical Engineering and Automation
Major Grade: 4.0/5.0 (90/100)

WORK EXPERIENCE

Hong Kong University of Science and Technology (Guangzhou) Dec. 2021 – Jul. 2022

Research Assistant Advisor: Prof. Hongce Zhang

Formal property verification of microprocessors

Peng Cheng Laboratory Jul. 2021 – Dec. 2021

Digital IC Physical Design Intern Advisor: Dr. Biwei Xie

Back-end physical design of an SoC from RTL to GDSII layout

NOTABLE PROJECTS

Register-Transfer Level (RTL) Design Quality Prediction

Dec. 2022 – Present

- Extracted abstract syntax tree of RTL as graph representation
- Collected groud truth PPA data with commercial EDA tools
- Developing suitable machine learning model for timing, power, area prediction separately (WIP)

Symbolic-Simulation-Guided Invariant Synthesis for Microprocessor Verification

Dec. 2021 – Nov. 2022

- Achieved an end-to-end unbounded formal verification framework for microprocessors
- Constructed a symbolic simulation framework to get the abstract states of the microprocessor
- Generated the inductive invariants to implement the unbounded checking of the properties
- Tested the framework with multiple pipelined processor test cases

"One Student One Chip" Project Jul. 2021 – Dec. 2021

- Responsible for physical design of an SoC with commercial EDA tools, which has been taped-out based on 110nm SMIC process node
- Completed an entire back-end flow, including *Logic Synthesis, Static Timing Analysis, Formal Equivalence Checking, Place & Route, and Physical Verification*
- Connected with SoC team to jointly complete clock specification, standard design constraints and other relevant tasks
- Realized RTL design of a single cycle RISC-V processor

Real time Visible Spectrum Analysis Chip System (Undergraduate Graduation Project)

Nov. 2020 – Jun. 2021

- Designed a spectrometer silicon photonics integrated circuit technology to sample the spectral signals, which has been taped-out based on 180nm CUMEC process node
- Recovered the unknown input spectral signals with machine learning methods, such as linear regression and compressed sensing

- Applied for two national invention patents and participated in the journal paper writing

Publications

Wenji Fang, and Hongce Zhang, "WASIM: A Word-level Abstract Symbolic Simulation Framework for Hardware Formal Verification". *International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS)*, 2023.

Honors and Awards

Finalist Prize of the Mathematical Contest in Modeling and Interdisciplinary Contest in Modeling	2020
1st Prize of the Electronics Circuit Design Competition of NUAA	2019
Infineon Enterprise Scholarship	2020
Outstanding Volunteer, 2019 Youth Science Camp (Jiangsu Camp)	2019
Academic Scholarship of NUAA	2017-2020
Merit Students Scholarship of NUAA	2017-2020
Merit Student of NUAA	2017-2020

Skills

- Electronics Software
  Cadence and Synopsys EDA tools; Xilinx Vivado; Yosys;
- Programming Language
  Python; C/C++; Verilog;
- Mathematical Software
  MATLAB, SPSS