YIFENG XIAO

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EDUCATION

University of Southern California (USC), Los Angeles, CA, U.S. Jan. 2021 - Present
Ph.D. in Ming Hsieh Department of Electrical and Computer Engineering
GPA: 3.85/4.0

Fudan University (FDU), Shanghai, China Aug. 2016 - Jul. 2020
B.E. in Microelectronic Science and Engineering

University of Sudney (USYD), Sydney, Australia Feb. 2019 - Jun. 2019
Exchange Student in Department of Information and Computer Engineering

RESEARCH EXPERIENCE

Timing Requirements Analysis and Validation using Assume-Guarantee Contracts Oct. 2021 - Present
Advisor: Prof. Pierluigi Nuzzo, Viterbi School of Engineering, USC
- Use Assume-Guarantee contracts to model different design viewpoints of manufacturing system.
- Implement verification of consistency, compatibility and refinement via Gurobi and Z3 solver.
- Develop requirements verification and design space exploration via system decomposition and refinement checking.

Robustness Verification of Neural Network-Enabled Cyber-Physical System Apr. 2021 - Sep. 2021
Advisor: Prof. Pierluigi Nuzzo, Viterbi School of Engineering, USC
- Introduce a SMC-based framework for robustness verification of Neural Network.
- Conduct robustness verification for Neural Network-based perception on MNIST dataset.
- Conduct robustness verification and sensitivity analysis in the reinforcement learning-enabled mountain car system.

Graph-based Automated Reference Placecment for Printed Circuit Board (PCB) Design Aug. 2020 - Mar. 2021
Advisor: Jianli Chen, School of Microelectronics, FDU
- Design a graph-based data structure for PCB netlist information.
- Explore the graph neural network and graph isomorphism to detect similar designs in the netlist.
- Develop a subgraph matching technique for automated reference placement.

Low-Cost Hotspot Detection with Active Entropy Sampling Dec. 2019 - Apr. 2020
Advisor: Bei Yu, Department of Computer Science and Engineering, The Chinese University of Hong Kong (CUHK)
- Dispatch layout into clips and conduct feature extraction with principal component analysis.
- Develop an entropy-based technique considering model uncertainty and data diversity.
- Apply an active learning framework for hotspot detection with higher accuracy and less time consuming.

TEACHING EXPERIENCE

Self-Driving Vehicle Testbed Sep. 2021 - Present
Mentor for USC Viterbi Center for Undergraduate Research in Viterbi Engineering (CURVE) Program

Robustness Verification for Traffic Sign Classification System Jun. 2022 - Jul. 2022
Mentor for 2022 USC Viterbi Summer High School Intensive in Next-Generation Engineering (SHINE) Program

USC Viterbi Graduate Mentorship Program Aug. 2022 - Nov. 2022

PUBLICATION

Conference Papers
- Su, M., Xiao, Y., Zhang, S., Su, H., Xu, J., He, H., ... & Chang, Y. W. (2022). Late Breaking Results: Subgraph Matching Based Reference Placement for PCB Designs. DAC 2022.

- Xiao, Y., Su, M., Yang, H., Chen, J., Yu, J., & Yu, B. (2021, December). Low-Cost Lithography Hotspot Detection with Active Entropy Sampling and Model Calibration. DAC 2021.
- Ma, C., Xiao, Y., Wang, S., Yu, J., & Chen, J. (2021, October). CongestNN: A Bi-Directional Congestion Prediction Framework for Large-Scale Heterogeneous FPGAs. ASICON 2021.

AWARD

2020 College Graduate Excellence Award of Shanghai (5/122)
2019 National IC Design Competition - First Prize for Undergraduate Group
2018 SCSK Corporation Scholarship (1/122)
2018 Undergraduate Excellence Scholarship of FDU
2017 Painting and Handwriting Contest of FDU - First Prize

TECHNICAL SKILLS

Languages: Chinese (Native), English (Proficient)
Programming: Python, C/C++, Verilog, Java, Perl
Software & Platforms: MATLAB, Tensorflow, Pytorch, Gurobi, Z3, Latex, Cadence, Vivado