

Ling Qiu

Electrical Engineering West
University Park, PA-16802
sites.google.com/view/lingqiu
(402)-416-5975 | lingq@psu.edu

Education

Pennsylvania State University , State College, PA, USA	2019- Present
○ Doctor of Philosophy: Informatics	
Clemson University , Clemson, SC, USA	2016- 2019
○ Master of Science: Electrical Engineering	
○ GPA: 3.91/4.00	
University of Nebraska, Lincoln , Lincoln, NE, USA	2013-2016
○ Bachelor of Science: Electrical Engineering	
○ GPA: 3.62/4.00	
Northwestern Polytechnical University , Xi'an, Shaanxi, China	2011-2013
○ Attended	

Research Experience

Pennsylvania State University , State College, PA	July 2019 – Present
<i>Improving Noise Resiliency of Variational Quantum Factoring</i>	
Advisor: Dr. Ghosh Swaroop	
○ Implement Quantum Approximate Optimization Algorithm (QAOA) using Qiskit, a quantum computing simulation package in Python.	
○ Implement the design and simulation flow of variational quantum factoring (VQF) in Python to automatically map a factoring problem into a parametric quantum circuit.	
○ Propose a novel policy-based design flow to alleviate the impact of quantum noise on VQF.	
○ Explore approaches based on quantum gate commutation rules to improve the noise resiliency of VQF.	
Clemson University , Clemson, SC	2017-2019
<i>Designing Approximate Circuits using Data-driven Approaches</i>	
Advisor: Dr. Yingjie Lao	
○ Exploit approximate circuits' input and error patterns to systematically design the compensation blocks for any given combinational approximate circuit.	
○ Propose novel data-driven methods using feature selection techniques to design compensation circuits for a wide variety of approximate circuits.	
○ Implement a thorough design flow in Python based on the proposed methods.	
○ Test and evaluate the proposed methods on truncated multipliers, approximate adders and other digital logic circuits.	
<i>Probabilistic Gate-Level Pruning for Approximate Circuit Design</i>	
Advisor: Dr. Yingjie Lao	
○ Exploit correlation between toggle activity of circuits' internal wires and outputs to facilitate gate-level pruning accuracy.	
○ Propose strategic data-driven methods to evaluate gate-significance.	
University of Nebraska, Lincoln , Lincoln, NE	2015-2016
<i>Missouri River Basin Precipitation Quantitative Analysis</i>	

- Analyze the main patterns of spatial distribution and temporal variability of precipitation in the Missouri River Basin using various data mining approaches, e.g. Principle Component Analysis, and etc.
- Present the research outcome as a poster at the annual UNL undergraduate research fair.

Teaching Experience

CMPSC 131 Teaching Assistant, Programing and Computation I, Penn State University.	Fall 2019
<ul style="list-style-type: none"> ○ Hold recitations and Office hours 	
ELEC 4590/6590 Teaching assistant, Integrated Circuit Design, Clemson University	2017-2018
<ul style="list-style-type: none"> ○ Compose lab tutorials and assignments ○ Lecture lab on arithmetic circuit structure, Verilog and HSPICE; teach various Synopsys tools (Design Compiler, VCS, Custom Designer) ○ Assist students on lab assignments and final projects ○ Grade lab reports 	
ELEC 2620 Teaching assistant, Electric Circuits II, Clemson University	Spring 2018
<ul style="list-style-type: none"> ○ Tutor students on review sessions ○ Grade homework 	

Publications

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- **L. Qiu**, M.Alam, A.Ash-Saki, G.Swaroop. "Resiliency Analysis and Improvement of Variational Quantum Factoring in Superconducting Qubit." *Design Automation Conference (DAC)*, San Francisco, CA, July 2020. (in review)
 - **L. Qiu**, M.Alam, A.Ash-Saki, G.Swaroop. "Analyzing Resilience of Variational Quantum Factoring under Realistic Noise." *Government Microcircuit Applications & Critical Technology Conference (Gomactech)*, San Diego, CA, March 2020. (accepted)
 - **L. Qiu**, Z. Zhang, J. Calhoun, Y. Lao. "Towards Data-Driven Approximate Circuit Design." *IEEE Computer Society Annual Symposium on VLSI (ISVLSI)*, Miami, FL, July 2019. (accepted as Lecture)
 - **L. Qiu** & Y. Lao. "A Systematic Method for Approximate Circuit Design Using Feature Selection." *IEEE International Symposium on Circuits and Systems (ISCAS)*, Florence, Italy, May 2018. (accepted as Lecture)

Selected Honors and Awards

○ Dean's List	2013-2015
○ Global Ambassador Scholarship	2013-2016
○ Undergraduate Creative Activity and Research Stipend	2015-2016
○ ISCAS Student Travel Award	2018

Presentations

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- "A Systematic Method for Approximate Circuit Design Using Feature Selection", ISCAS2018, Florence, IT, May, 2018

Service

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- Reviewer for IEEE International Symposium on Circuits and Systems (ISCAS 2019)
 - Sub-Reviewer for IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP 2019)
 - Sub-reviewer for IEEE Computer Society Annual Symposium on VLSI (ISVLSI 2018)

Technical Skills

- Programming Language: Python, Matlab, C, R, Verilog
- Software & Platform: Numpy, Pandas, LaTeX, Linux, Synopsys VCS, Synopsys Design Compiler

Extracurricular Activities

Malaysian Night 2014

- Serve as the Main Actor and volunteer

Clemson Alternative Break Program 2016

- Participate in community service on the issues of environmental and Native American at Maryville, Tennessee.