**Ling Qiu**

Electrical Engineering West

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**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

***Improving Noise Resiliency of Variational Quantum Factoring***

*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

***Designing Approximate Circuits using Data-driven Approaches***

*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.

***Probabilistic Gate-Level Pruning for Approximate Circuit Design***

*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

***Missouri River Basin Precipitation Quantitative Analysis***

* 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

* Hold recitations and Office hours

**ELEC 4590/6590** Teaching assistant, Integrated Circuit Design, Clemson University 2017-2018

* 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

* Tutor students on review sessions
* Grade homework

**Publications**

* **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.” *IEEEE 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**

* “A Systematic Method for Approximate Circuit Design Using Feature Selection”, ISCAS2018, Florence, IT, May, 2018

**Service**

* 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.