Ling Qiu

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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

University of Nebraska, Lincoln, Lincoln, NE, USA 2013 – 2016
- Bachelor of Science: Electrical Engineering

Northwestern Polytechnical University, Xi'an, Shaanxi, China 2011 – 2013
- Attended

Research Experience (Selected)

Pennsylvania State University, State College, PA May 2020 – Present

Advisor: Dr. Saeed Abdullah

- **Nurse AMIE: A Smart-Speaker Based Application for Women with Breast Cancer**
  - Proposed an Alexa skill to provide daily supportive care intervention for women with Metastatic Breast Cancer.
  - Designed the Graphical User Interface (GUI) and Voice User Interface (VUI) of the skill based on the characteristics of women with Metastatic Breast Cancer.
  - Developed the skill in Python and Alexa Presentation Language (APL) and used AWS Lambda and AWS DynamoDB to host the skill and log user data, respectively.
  - Applied mix methods to analyze the preliminary usability of the application.
- **Using Twitter Data to Evaluate the Mental Well-being of Essential Workers During COVID-19**
  - Explored the Twitter API to scrape the Twitter data of essential workers and average users.
  - Analyzed the sentiment and the temporal patterns of the Twitter data in Python.

Pennsylvania State University, State College, PA June 2019 – May 2020

Advisor: Dr. Ghosh Swaroop

- **Improving Noise Resiliency of Variational Quantum Factoring**
  - Proposed a novel policy-based design flow to alleviate the impact of quantum noise on VQF.
  - Implemented the Quantum Approximate Optimization Algorithm (QAOA) using Qiskit, a quantum computing simulation package in Python.
  - Implemented the design and simulation flow of variational quantum factoring (VQF) in Python to automatically map a factoring problem into a parametric quantum circuit.

Clemson University, Clemson, SC 2017 – 2019

Advisor: Dr. Yingjie Lao

- **Designing Approximate Circuits using Data-driven Approaches**
  - Proposed novel data-driven methods using feature selection techniques to design compensation circuits for a wide variety of approximate circuits.
  - Implemented a thorough design flow in Python based on the proposed methods.
  - Testes and evaluated the proposed methods on truncated multipliers, approximate adders and other digital logic circuits.
- **Probabilistic Gate-Level Pruning for Approximate Circuit Design**
  - 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.

Publications

- **L. Qiu**, B. Kanski, S. Doerksen, R. Winkels, K. Schmitz, S. Abdullah. "Nurse AMIE: Using Smart Speakers to Provide Supportive Care Intervention for Women with Metastatic Breast Cancer." *CHI'21 Late- Breaking Work on Human Factors in Computing Systems (CHI Late-Breaking-Work 2021)*, Yokohama, Japan, May 2021.
- Johnna Blair, Chi-Yang Hsu, **Ling Qiu**, Shih-Hong Huang, Ting-Hao K. Huang, Saeed Abdullah. "Using Tweets to Assess Mental Well-being of Essential Workers During the COVID-19 Pandemic." *CHI'21 Late- Breaking Work on Human Factors in Computing Systems (CHI Late-Breaking-Work 2021)*, Yokohama, Japan, May 2021.
- **L. Qiu**, M.Alam, A.Ash-Saki, G.Swaroop. "Resiliency Analysis and Improvement of Variational Quantum Factoring in Superconducting Qubit." *ACM/IEEE International Symposium on Low Power Electronics and Design (ISLPED)*, Boston, MA, August 2020.
- **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.
- **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)

Teaching Experience (Selected)

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

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

- "Resiliency Analysis and Improvement of Variational Quantum Factoring in Superconducting Qubit.", ISLPED 2020, Boston, MA, August 2020 (Virtual).
- "A Systematic Method for Approximate Circuit Design Using Feature Selection", ISCAS 2018, Florence, IT, May 2018.

Service

- **Reviewer**: IEEE International Symposium on Circuits and Systems (ISCAS 2019).
- **Sub-Reviewer**: 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, ASK-SDK (Alexa Skill Kit), AWS, Linux, Synopsys VCS, Synopsys Design Compiler

Extracurricular Activities

Malaysian Night 2014

- Served as the Main Actor and volunteer

Clemson Alternative Break Program 2016

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