Qijia (Agnes) Li

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EDUCATION

Cornell University, College of Engineering, Ithaca, NY **Expected Dec 2023**
Bachelor of Science, Electrical and Computer Engineering
GPA: 4.011 (Dean's List, Fall 2019-Spring 2023)

Teaching Assistant:
- Introduction to Microelectronics **Jan 2023-May 2023**
- Introduction to Computing with Python **Aug 2021-Dec 2021**

Duties include developing lab projects, leading lab sessions, holding office hours, and grading assignments and exams.

PUBLICATIONS & PATENTS

- **Q. Li**, Y. Hou and K. K. Afridi, "Merged Switched-Capacitor Piezoelectric-Resonator Based DC-DC Converter with High Voltage Conversion Ratio, " *IEEE 24th Workshop on Control and Modeling for Power Electronics COMPEL 2023*, Ann Arbor, MI, USA, pp. 1-8, oral presentation.
- Y. Hou, K. K. Afridi, and **Q. Li**. Merged Switched-Capacitor Piezoelectric Resonator Based Power Converter. U.S. Application No. 63/470,299. Filed June, 2023. Patent Pending.

RESEARCH EXPERIENCE

Merged Switched-Capacitor Piezoelectric-Resonator Based DC-DC Converter with High Conversion Ratio
Undergraduate Researcher, supervised by Prof. Afridi **Oct 2021-Present**

- Proposed a piezoelectric-resonator based DC-DC converter, combined with a switched-capacitor network, to achieve high efficiency across a wide range of voltage conversion ratios.
- Performed steady-state analysis of the converter and calculated the state variables using MATLAB. Simulated the converter with designed sensing control using PLECS and SIMetrix/SIMPLIS, and analyzed the efficiencies with various voltage conversion ratios.
- Designed a PCB using Altium Designer and constructed a prototype of the proposed converter. Conducted a series of experiments to troubleshoot the prototype and measured the efficiencies of the converter.

Light-Based Isolated High-Voltage-Conversion-Ratio Compact Power Converters
Undergraduate Researcher, supervised by Prof. Afridi and Prof. Pollock **Jun 2020-Oct 2021**

- Investigated methods for utilizing light to convert high voltage to low voltage, aiming to surpass the efficiency and compactness of conventional power converters.
- Developed three theoretical models of the power converter using LTspice and tested their efficiencies at a 1W output power. Also conducted analysis of power loss in the models.
- Communicated with manufacturers to procure essential electronic components.

WORK EXPERIENCE

SONOS, Electrical Engineering Co-op – Power and Audio, Electronic Product Development Team **Jul 2022-Dec 2022**

- Designed a flyback transformer that will be used in a product with given input and output requirements. Wrote flyback transformer specifications and ordered samples from the vendors.
- Designed the entire flyback converter circuit including the auxiliary winding circuit and the feedback circuit. Drew the flyback converter schematic with OrCAD.
- Tested the performance of the flyback converter and debugged its circuit with an evaluation board.

HONORS & AWARDS

ELI Undergraduate Research Award (2x) **2020 Summer, 2023 Summer**
COMPEL Student Travel Grant **Jun 2023**
IEEE Eta Kappa Nu**,** Cornell University, *Member* **Jan 2023-Present**

SPECIALIZED SKILLS

Programming Language: Python, C/C++, MATLAB, Java, assembly language, Verilog
Software & Tools: LTspice, PLECS, SIMetrix/SIMPLIS, Altium Designer, Cadence Virtuoso, COMSOL, L-Edit