KAREN TSANG

Brick, NJ | (848) 469-9154 | ktsang30@gatech.edu | U.S. Citizen
https://ktsang0492.wixsite.com/portfolio | www.linkedin.com/in/ktsang0492

EDUCATION

Georgia Institute of Technology | Atlanta, Georgia   *August 2023 – Present*
Bachelor of Science in Electrical Engineering, GPA 3.78/4.00   Projected Graduation: May 2027
- Georgia Tech Shenzhen Institute: China Summer Program   *May – August 2024*
- Activities: IEEE-HKN Eta Kappa Nu Honor Society, Women in Electrical and Computer Engineering, Georgia Outreach: Advancing the Lives of the Special-needs (GOALSoccer), Georgia Tech ECE Peer Tutoring, Georgia Tech Creatives

WORK EXPERIENCE

Johnson & Johnson MedTech | Ethicon Surgical Technologies   *August – December 2026*
Electrical Engineering Research and Development Co-op   Cincinnati, Ohio
- Schematic capture and PCB layout for new board designs and required test fixtures; prototyping and testing necessary hardware, analog/digital circuits used for product design
- Collaborate with mechanical, software and system engineers to develop integrated solutions for surgical robotic applications
- Participate in hardware verification and validation testing following necessary procedures; assist in creating electronic hardware documentation and release packages.

Kaleidoscope Innovation   *May – August 2025*
Electrical Engineering Co-op   Cincinnati, Ohio
- Led schematic and PCBA design for an automated control system incorporating complex sensor and feedback networks over I2C and SPI protocols, PID closed-loop motor control, power management, and WIFI/Cellular wireless data transmission.
- Drove cross-functional collaboration with engineering technicians, aligning electrical design with mechanical constraints while managing system-level requirements and a multi-faceted design schedule.
- Performed load cell calibration and integrated load cell into UR3 robotic arm fixture to explore force sensing feedback and tissue topography mapping for surgical robotic tools.

Johnson & Johnson MedTech | Ethicon Surgical Technologies   *January – April 2025*
Electrical Engineering Research and Development Co-op   Cincinnati, Ohio
- Designed schematic to test design of NFC reader module with wireless power harvesting, I2C protocols, and USB/UART interfaces; produced block diagram, schematic, and hardware design document, for multi-board solution in Altium.
- Developed and implemented software to automate data post-processing and visualization, creating interactive graphs (Python).
- Authored conclusive engineering study report, conducting regression analysis to examine correlations between cord length and electrical parameters such as inductance, resistance, and capacitance.
- Led implementation of a rotary encoder module to improve accuracy and serviceability of test fixture, engaging in troubleshooting, rapid prototyping, custom cord fabrication, and firmware development (Python) using STM microcontrollers.
- Designed and executed test protocols to determine survivability of PCBAs used in robotic surgical instruments through expected sterilization processes, testing functionality and evaluating pin degradation, RF wire integrity, and conformal coating.
- Collaborated cross-functionally with cleaning and sterilization, mechanical engineering, and software/firmware development teams to align on experimental objectives; spearheaded engineering study, allocated materials, and executed testing.

PROFESSIONAL ORGANIZATIONS

Dynamic Mobility Laboratory | Atalante Patient Model Generator   *August 2025 – Present*
- ***Undergraduate Researcher:*** Developing a Python pipeline to generate patient–exoskeleton models by storing and fusing biomechanical data, exporting MuJoCo-compatible XML, and improving on limitations of the legacy MATLAB workflow.

Georgia Tech Department of Electrical and Computer Engineering   *August 2025 – Present*
- ***Teacher's Assistant for Digital Logic Design (ECE 2020):*** Hosts exam review sessions and office hours, performs lab checkoffs and troubleshooting, and grades assignments for 75 students, facilitating learning process and assisting the professor.

Georgia Tech Medical Robotics Club   *August 2023 – Present*
- ***Team Limbo Electrical Engineering Lead:*** Leads a 60-member team developing a low-cost prosthetic arm with haptic feedback; drives cross-functional collaboration, defines overarching goals and constraints, and teaches peers skills such as: PCB design, signal processing, motor controls, power management, benchtop electronics, and prototyping.
- ***Social Media Manager:*** Designs graphics to recruit new members and foster industry connections, increased followers by 35%.

The HIVE Interdisciplinary Design Commons Makerspace   *August 2024 – Present*
- ***Peer Instructor:*** Providing training and assistance in electronic benchtop work, laser cutting, 3D printing, embroidery, and crafts to help end users use equipment and work on projects, fostering a collaborative maker environment.

SKILLS

Technical: Altium Designer, KiCAD, schematic design, PCBA design, C/C++, Python, Arduino, Raspberry Pi, Java, MATLAB, VHDL, Assembly, Intel Altera Quartus Prime FPGA Design, data analysis, STM32 Cube Programmer, ArcGIS, Fusion360 CAD

Languages: English (fluent), Mandarin (intermediate), Cantonese (conversational), Spanish (basic)