KAIYUAN HOU

EDUCATION

Columbia University — New York, NY, USA
Ph.D. Electrial Engineering **4.07/4.00** — **09/2021 - Present**
Research Advisor: Dr. Xiaofan (Fred) Jiang

University of Colorado Boulder — Boulder, CO, USA
B.S. Electrical Engineering **3.98/4.00** — **09/2017 - 05/2021**
Summa Cum Laude; Member of Tau Beta Pi; Dean's list from 2017 fall to 2021 fall; Merit Scholarship;

RESEARCH EXPERIENCE

Intelligent and Connected Systems Lab, Columbia University — **09/2021 - Present**
Graduate Research Assistant

- *SIFTER*: Lead the development of SIFTER, a low-cost RGB-thermal camera system for continuous multi-person fever screening. Implement real-time algorithms for head detection, tracking and reconstructing personalized 3D head model for each head detected, achieving a measurement error rate of within 0.4°F at 2 meters and 0.6°F at 3.5 meters without introducing bias on different skin colors. Deploy multiple systems at the entrance of clinicsyes and medical center.
- *LegoSENSE*: Develop a plug-and-play platform based on Raspberry Pi, designed for no-code data acquisition, enabling users to custom mix-and-match a variety of sensors. Contribute to the system architecture design and conducted evaluations focusing on ease-of-use, flexibility, and scalability.
- *ARSteth*: Develop an Augmented Reality (AR)-assisted intelligent stethoscope designed to enable accurate self-auscultation for everyone at home. Implement an integrated system that leverages computer vision, acoustic intelligence, human-computer interaction, and signal processing algorithms. Conduct comprehensive evaluations that demonstrate the effectiveness and accuracy of the AR guidance in the system.
- *Anemoi*: An low-cost drone system designed to autonomously map 3D airflow fields in indoor environments. Engineer various flight control loops to explore the impact of different PID configurations on airflow estimation accuracy.

LASP, University of Colorado Boulder — **09/2020 - 05/2021**
Undergraduate Research Assistant

- *The Medium Energy Electron Telescope (MEET)*: A 1U CubeSat-compatible instrument to study the source, loss, intensity, and dynamic variation of 30-400 keV electrons in Earth's inner belt. Implement a detector simulator circuit that met stringent performance metrics, including an energy resolution of less than 500 eV, a charge collection time of 200 ns, and a maximum count rate exceeding 500 kHz. Design the simulator's PCB board, and also contribute to the design of the charge-sensitive amplifier (CSA). The project's performance was validated through ground-based simulations using FPGA on CmodA7.

WORK EXPERIENCE

Medtronic Research
Research Intern — *Summer 2020, Summer 2021*

- Designed an ultrasonic dissector with enhanced connectivity and intelligence. The system streams real time operating data of ultrasonic dissector to a remote server and detect damage to the jaw and jaw liner.

Columbia University
Teaching Assistant

- Teaching assistant for the graduate-level *Internet-of-Things*, *Reinforcement Learning* and *Blockchain*(two semesters) courses offered by Columbia University.
- Designed and graded assignments, labs, and exams. Hosted office hours and assisted students on course material.

University of Colorado Boulder
Course Assistant

- Teaching assistant for *Analog Circuits* (two semesters) and *Computer Architecture* (two semesters) courses offered by University of Colorado Boulder.
- Designed and graded assignments, labs, and exams. Hosted office hours and assisted students on course material.