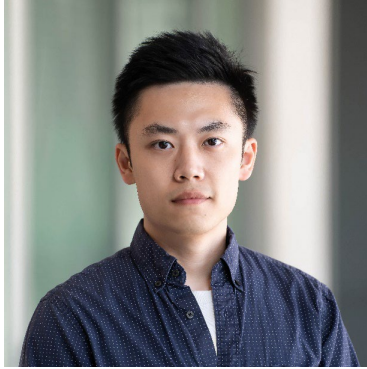




The Chinese University of Hong Kong
Department of Biomedical Engineering

Wearable Ultrasound Technology for Deep Tissue Monitoring and Beyond



Dr. Muyang LIN

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University of California, San Diego

Date: 14 January 2026 (Wed)

Time: 2:30 – 3:30 pm

Venue: Zoom (<https://cuhk.zoom.us/j/94792895874?pwd=UcuioiUbsNk1HIjUK992ebLbkrR5c.1>)



Abstract

Medical ultrasound is a powerful diagnostic and evaluation tool in hospitals and clinics due to its safety and versatility. Traditional ultrasound suffers from operator dependency and does not allow long-term usage. Recent advances in wearable ultrasound technologies have demonstrated the potential for hands-free data acquisition, but technical barriers remain as these probes require wire connections, can lose track of moving targets, and create data-interpretation challenges. Here we report a fully integrated autonomous wearable ultrasonic-system-on-patch (USoP). A miniaturized flexible control circuit is designed to interface with an ultrasound transducer array for signal pre-conditioning and wireless data communication. Machine learning is used to track moving tissue targets and assist the data interpretation. We demonstrate that the USoP allows continuous tracking of physiological signals from tissues as deep as 164 mm. On mobile subjects, the USoP can continuously monitor physiological signals, including central blood pressure, heart rate, and cardiac output, for as long as 12 h. This result enables continuous autonomous surveillance of deep tissue signals toward the internet-of-medical-things.

Biography

Muyang LIN is a Postdoctoral Researcher in Nanoengineering at the University of California, San Diego, working under the mentorship of Prof. Sheng XU on soft biomedical devices. His research focuses on developing wearable ultrasound systems that expand access to clinical imaging by enabling continuous deep-tissue monitoring beyond hospital settings. LIN's work on the ultrasound-system-on-patch (USoP) demonstrated wireless, long-term monitoring of central blood pressure, heart rate, and cardiac output from tissues as deep as 164 mm for up to 12 hours. His innovations have led to multiple patents, high-impact publications, and media coverage from The Wall Street Journal, the NIH Director's Blog, and the National Institute of Biomedical Imaging and Bioengineering.

**** ALL ARE WELCOME ****

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