

BME Seminar
Thursday, January 23rd, 2025
4:00-5:00pm
MJIS 2001

Weldon School of Biomedical Engineering
Purdue University

Ultrasound Imaging for Non-Invasive Vital Signs Monitoring and Periodontal Disease Charting

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Abstract:

Ultrasound is a non-invasive tool for real-time imaging of central organs and peripheral tissues. This talk explores the engineering and clinical translation of ultrasound-based medical applications. First, wearable ultrasound devices enable long-term monitoring of vital signs and central organs, such as blood pressure and cardiac activity. A wearable transcranial Doppler device was developed for continuous cerebral blood flow recording and functional imaging. Second, ultrasound offers a radiation-free method for diagnosing periodontal disease and monitoring oral health. A miniaturized intraoral transducer was designed for full-mouth imaging, and an AI model was developed to automatically interpret periodontal ultrasound images and measure clinical metrics. This AI tool enhances dental training and has the potential to streamline clinical practice, saving time in both educational and clinical settings.

Biography

Baiyan Qi is a postdoctoral scholar in the Department of NanoEngineering at UC San Diego. She received her Ph.D. in Materials Science and Engineering in 2023, under the supervision of Prof. Jesse Jokerst at UC San Diego. Her research in the Jokerst Group focuses on the development of ultrasound and photoacoustic imaging tools for monitoring oral health and their translation into human clinical trials.

~BME Faculty Host: Craig Goergen~