

High Frame-Rate Ultrasound Elasticity Imaging Through ECG-Gating

Shougang Wang

National Semiconductor, Santa Clara CA

Technical Abstract:

Ultrasound imaging is one of the widely used medical imaging modality owing to its real time, non-invasive and non-radiation feature. The system development is both towards more sophisticated, more signal processing high-end system and towards ultra-low power, ultra-portable devices. In this presentation, a high frame-rate ultrasound elasticity imaging will be described. The method was developed through synchronized electrocardiogram (ECG) gating to overcome the frame-rate limitations on standard clinical ultrasound systems. The axial displacement of the left ventricle of healthy human subjects was estimated using a RF-based speckle tracking technique. The electromechanical wave and the pulse wave propagation were imaged using the proposed imaging technique. Abnormal patterns of such wave propagation can be served as indicators of early cardiovascular disease, such as myocardial ischemia or infarction etc. At the end, a new ultrasound imaging method, ultrasound vibration potential imaging, will be briefly introduced to extend the presentation.