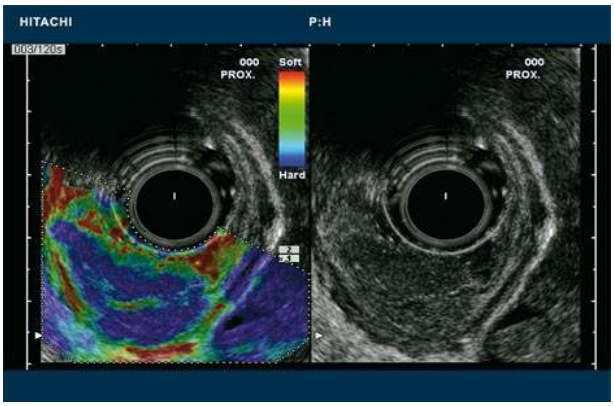
Department of Electrical Engineering
Technion—Israel Institute of Technology
Signal Acquisition Modeling and Processing Lab - המעבדה לחישה מידול ועיבוד אותות

Compressed Sensing for Ultrasound Elastography

Supervisor: Regev Cohen regev.cohen@campus.technion.ac.il

Elastography is a medical imaging modality that maps the elastic properties of soft tissue. The main idea is that whether the tissue is hard or soft will give diagnostic information about the presence or status of disease. For example, elastography is used for detection and diagnosis of breast, thyroid and prostate cancers. Certain types of elastography are also used to investigate disease in the liver.

Compressed sensing (CS) is a signal processing technique for efficiently acquiring and reconstructing a signal. This is based on the principle that, through optimization, the sparsity of a signal can be exploited to recover it from far fewer samples than required by the Shannon-Nyquist sampling theorem.



In this project, we will develop a new recovery method for ultrasound elastography based on CS framework. This study will involve learing the basics of ultrasound imaging and CS recovery methods, mathematical derivations and MATLAB simulations.

Required background:
Introduction to Digital Signal Processing (044198)
MATLAB

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