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

Velocity Estimation in Spatial-Temporal Frequency Domain

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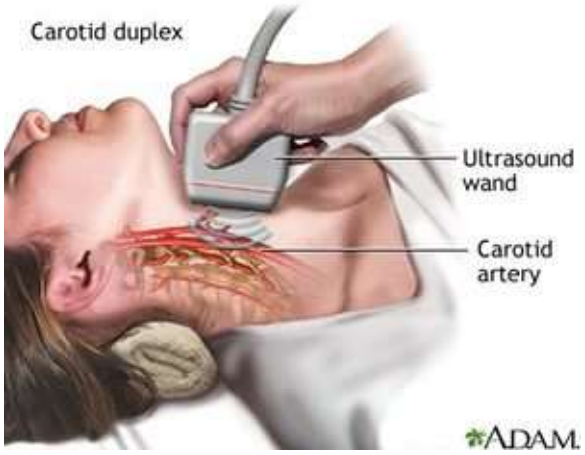
Doppler ultrasound is a non-invasive and safe modality that is used for the estimation of blood velocities by transmitting high-frequency sound waves (ultrasound) and analyzing the signals reflected from circulating red blood cells. Doppler scans help diagnose many conditions, including: heart valve defects and congenital heart disease, artery occlusions and aneurysms.

Elastography is a medical imaging modality that maps the elastic properties of soft tissue. 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.



In this project, we will study the performance of an image formation method, done in spatial-temporal frequency domain, which was recently developed in the lab. The project will require understanding the basics of ultrasound imaging and velocity estimation, as well as advanced tools of signal processing and MATLAB simulations.

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

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