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

Super-Resolution without contrast agents in US

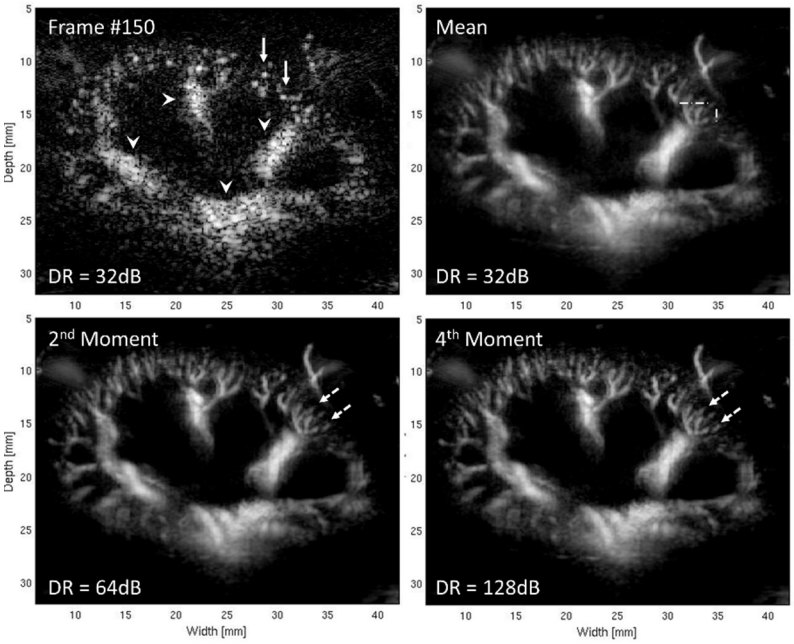
Supervisor: Regev Cohen, Oren Solomon

Project description:

Ultrasound super-localization microscopy techniques presented in the last few years enable non-invasive imaging of vascular structures at the capillary level by tracking the flow of ultrasound contrast agents (gas microbubbles). However, these techniques are currently limited by low temporal resolution and long acquisition times. Super-resolution optical fluctuation imaging (SOFI) is a fluorescence microscopy technique enabling sub-diffraction limit imaging with high temporal resolution by calculating high order statistics of the fluctuating optical signal.

In this project we will attempt to achieve super-resolution without the use of contrast agents.

We will explore different methods for separating the blood vessels from the tissue and apply super-resolution methods to the separated blood vessels.



Required background: Signal and systems, Mavlas, Mavla.

Environment: Matlab.

For further details, please contact Oren: orensol@tx