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

NEW

CT Super-Resolution by Non-Uniform Detector Arrays

Supervisor: Shahar Tsiper

Project description:

Medical CT imaging is probably the most widely used imaging tool in-use today. The biomedical companies constantly work to improve and get better resolution for the CT images.

In this project, we will learn and use sophisticated tools from signal processing, such as sub-Nyquist sampling, array processing, and super-resolution algorithms. Using these tools, we will create enhanced CT images, with higher resolution than the native scanner's resolution.

We will collaborate with General Electric Healthcare® to examine new ways to define the CT detector array in order to digitally create cleaner and sharper CT images. Doctors from Rambam hospital would also be happy to provide us with clinical feedback.

The students will first learn on tomographic imaging, and will get familiar with the required background in advanced signal processing. We will then design and build a simulator that can enhance the resolution in CT images.

Required background: Signal and systems, Mavlas
Environment: MATLAB

רמב"ם
הקריה הרפואית לבריאות האדם

GE Healthcare

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