



NEW

Faster selective plane illumination microscopy (SPIM)

Supervisor: Oren Solomon

Project description:

Super resolution fluorescence microscopy techniques are an ensemble of light -microscopy techniques which achieve spatial resolution beyond the limitations imposed by the diffraction of light. However, these techniques are currently limited by low temporal resolution and long acquisition times. Light-sheet microscopy enables fast 3D volumetric imaging of living specimens, but with degraded spatial resolution. Selective plane illumination microscopy allows for faster acquisition rates by changing the measurement process from Cartesian scanning to cylindrical scanning.

In this project, we will investigate an exciting new direction which will **suggest a new technique to measure and reconstruct the 3D volume** to achieve fast and high resolution scans of living neuronal samples.

The students will get a hands on experience with a research project, combining disciplines in fluorescence microscopy, sparse representations and optimization techniques.

This project is performed as part of a collaboration with the Levenberg lab from biomedical engineering.



Required background: Signal and systems, Mavlas, Mavla.

Environment: Matlab.

For further details, please contact Oren: orensol @tx.technion.ac.il