

**NEW**

Super-Resolution Light-sheet Fluorescence Microscopy

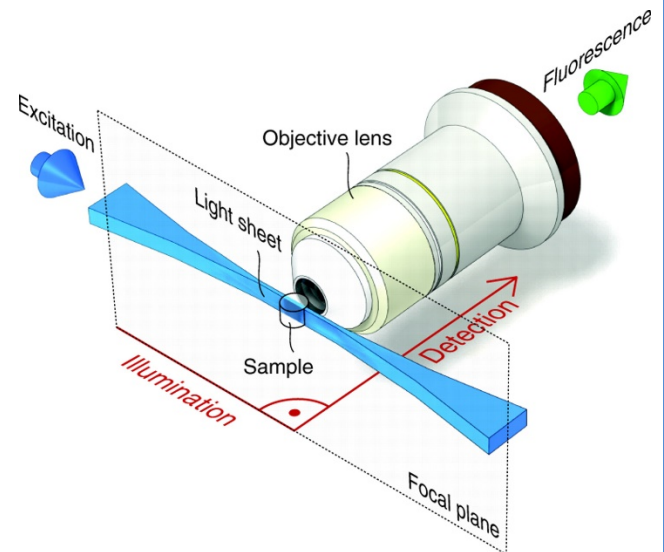
Supervisor: Oren Solomon

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. 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. On the other hand, Light-sheet microscopy enables fast 3D volumetric imaging of living specimens, but with degraded spatial resolution.

In this project, we will investigate an exciting new direction which will **combine the SOFI technique for sub-diffraction imaging and light-sheet microscopy**, which potentially may lead to a new type of **fast super-resolution microscope** for living specimen.

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



Required background: Signal and systems, Mavlas, Mavla.

Environment: Matlab.

For further details, please contact Oren: orensol@campus