



NEW

Super-Resolution Light-sheet Fluorescence Microscopy using dictionary learning

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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, when using large field of views (FOVs). On the other hand, high resolution images can be acquired by considering a smaller FOV.

In this project, we will investigate an exciting new direction which will **combine dictionary learning of both low and high resolution lightsheet images**, to improve both its temporal and spatial resolution.

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 a collaboration with the Levenberg lab from bio-medical engineering.



Required background: Signal and systems, Mavlas, Mavla.

Environment: Matlab.

For further details, please contact Oren: orensol@campus