Problem 4, 5 and 6: Microscopic image analysis

Microscopic image analysis plays a pivotal role in various scientific domains, particularly in the fields of biology and medicine. The challenge lies in developing robust image processing methods to extract meaningful information from microscopic images, enabling quantitative analysis and interpretation. The primary objective is to enhance the efficiency and accuracy of extracting relevant features and patterns from microscopic images.

All projects need prerequisite of python programming, pattern analysis and image processing background.

3 projects will deal with 3 different microscopic images:

a) Confocal fluorescent microscope - biological (plant/flower/cell) images for understanding energy barriers, transport and network behavior of cell organelle

b) AFM (atomic force microscope) - molecular level images of various substrates for next generation electronics

c) STM (scanning tunneling microscope) - atom level images for formation of structures and their property mapping for next generation electronics