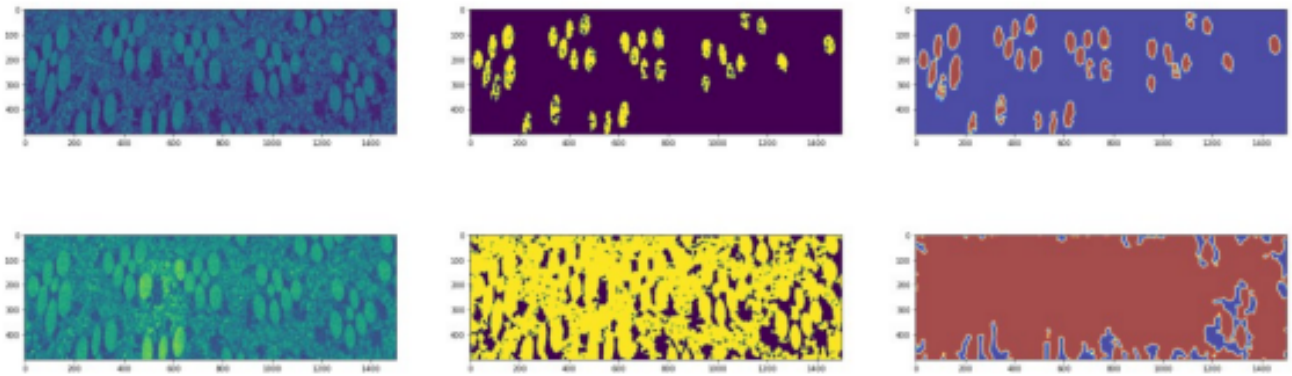
Fly-EM Computer Vision and Machine Learning project

Goal of this project is to segment fly retina images and find hexagonal photoreceptors in fly retina.

In this project our objective is to study the Drosophila eyes which are a useful model for studying the principles of vision and the neural basis of perception due to its relatively simple nervous system and genetic tractability. Our current goal is to study the impact of Vitamin A deficiency on the hexagonal rhabdomere structures.
We currently have a segmentation pipeline already in place, we need to improve the accuracy and scalability of the pipeline. The results look good for some images and could be better for some samples. The varying results we get from the segmentation pipeline are because the images in the dataset have varying contrast levels. This problem can be tackled using the traditional computer vision techniques or U-Net ML model.

The current stack of all images can be found here - https://mpsych.org/rister/
Segmentation Pipeline - https://github.com/jainkhere/neuro



Technologies: Jupyter notebook + Python + Keras U-Net + Linux