

Project synopsis - Project 8 segmentation of cell images

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Motivation:

The motivation for this project is to segment cells from real images in an automated fashion. This is important for many reasons such as reducing the time and energy it takes professionals to manually perform analysis of cell images in medical practice.

Background:

Segmentation of medical images is an ongoing field of research which sees new research being done continually. Most currently used segmentation algorithms rely on a few basic approaches that use the gradient field of the image to detect cell boundaries. This is done through multiple layers of varying sized convolutions which produce deep transformer like networks capable of segmenting information of importance. Some classic architectures for image segmentation tasks are the Segnet and Unet where the Unet has been considerably popular and developed ever since it was first introduced in 2015 paper "U-Net: Convolutional Networks for Biomedical Image Segmentation".

Milestones:

- Configure a functioning data loader.
- Implement the UNet architecture.
- Implement an RCNN architecture