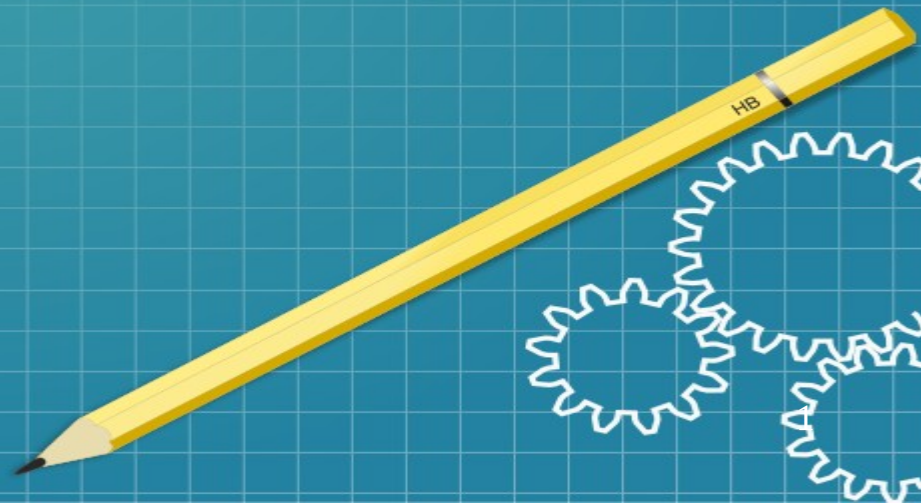
End-to-End Cell Counting Architecture for Microscopic Image Analysis

Presented By

Sourjya Chatterjee



Why should we count the Cells?

Why should we count the Cells?

- Monitoring Cell Health and Poliferation rate.
- Bacterial Research.

Let's Take a Brief

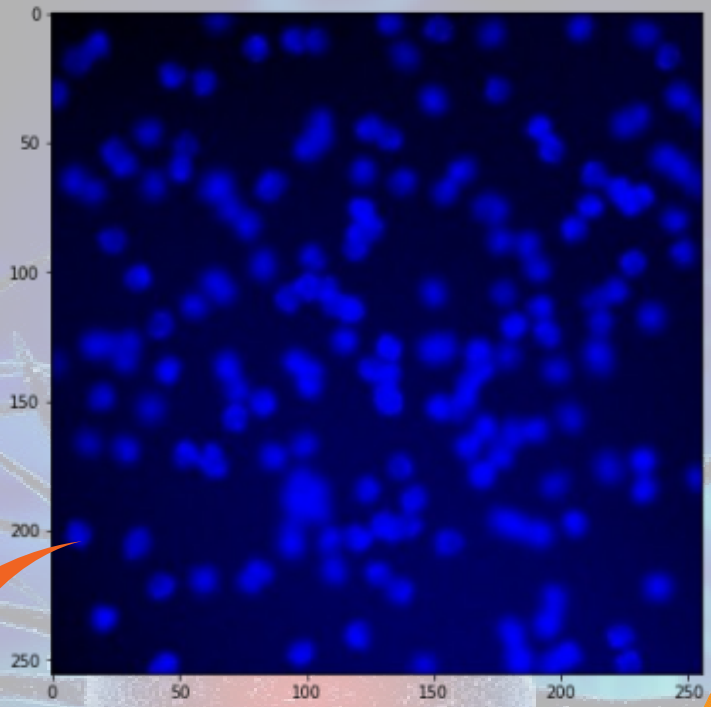
Look on The

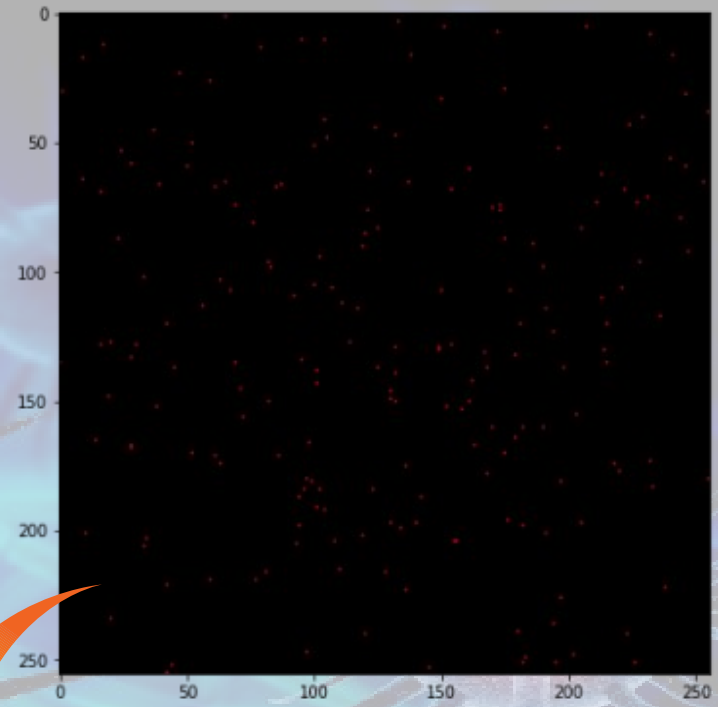
DataSet First

DataSet Link

https://github.com/ieee8023/countception

VGG CELLS

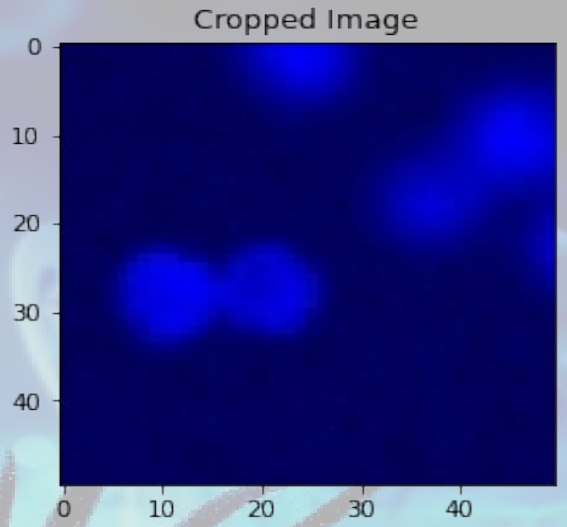


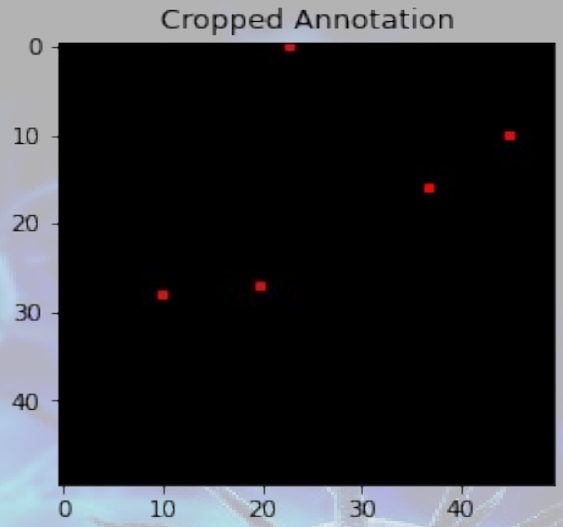


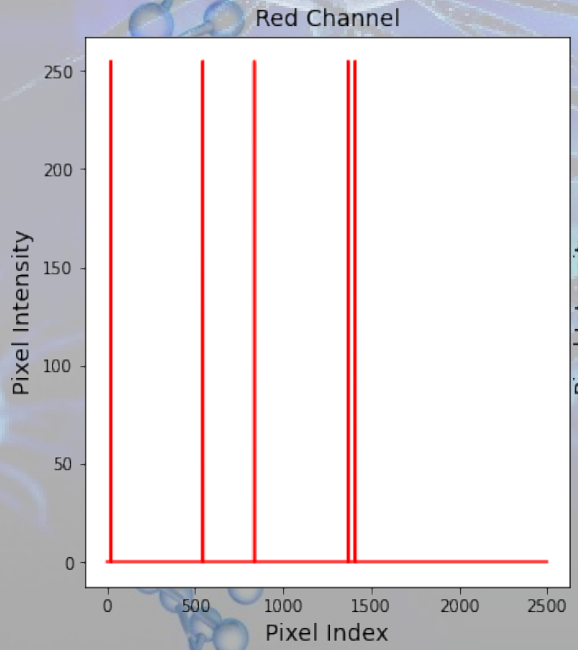
200 Images
Image Shape (256,256,3)

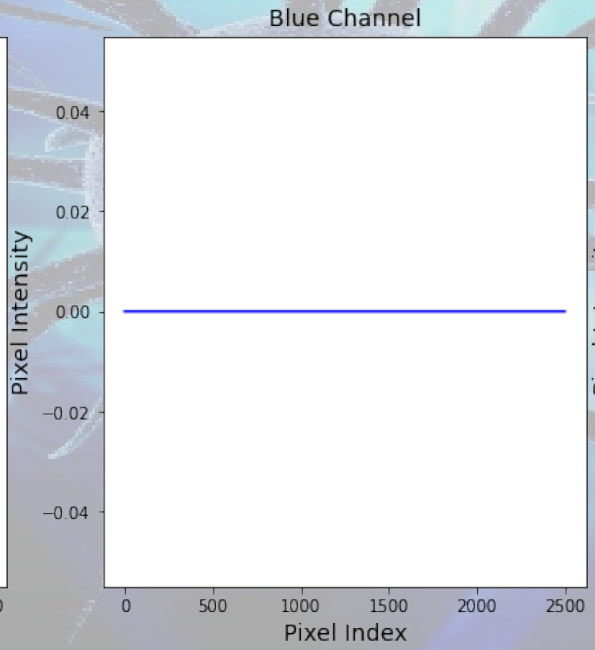
200 Annotations
Annotation Shape (256,256,3)

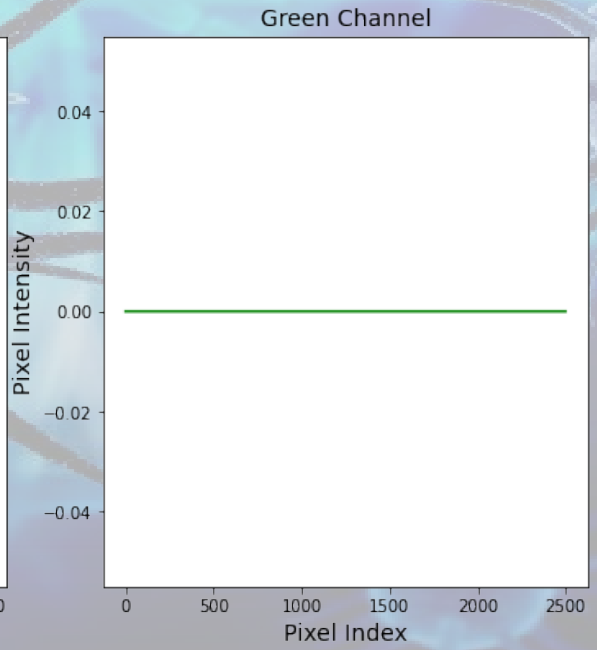
Randomly Cropped (50,50,3) Image & Annotation





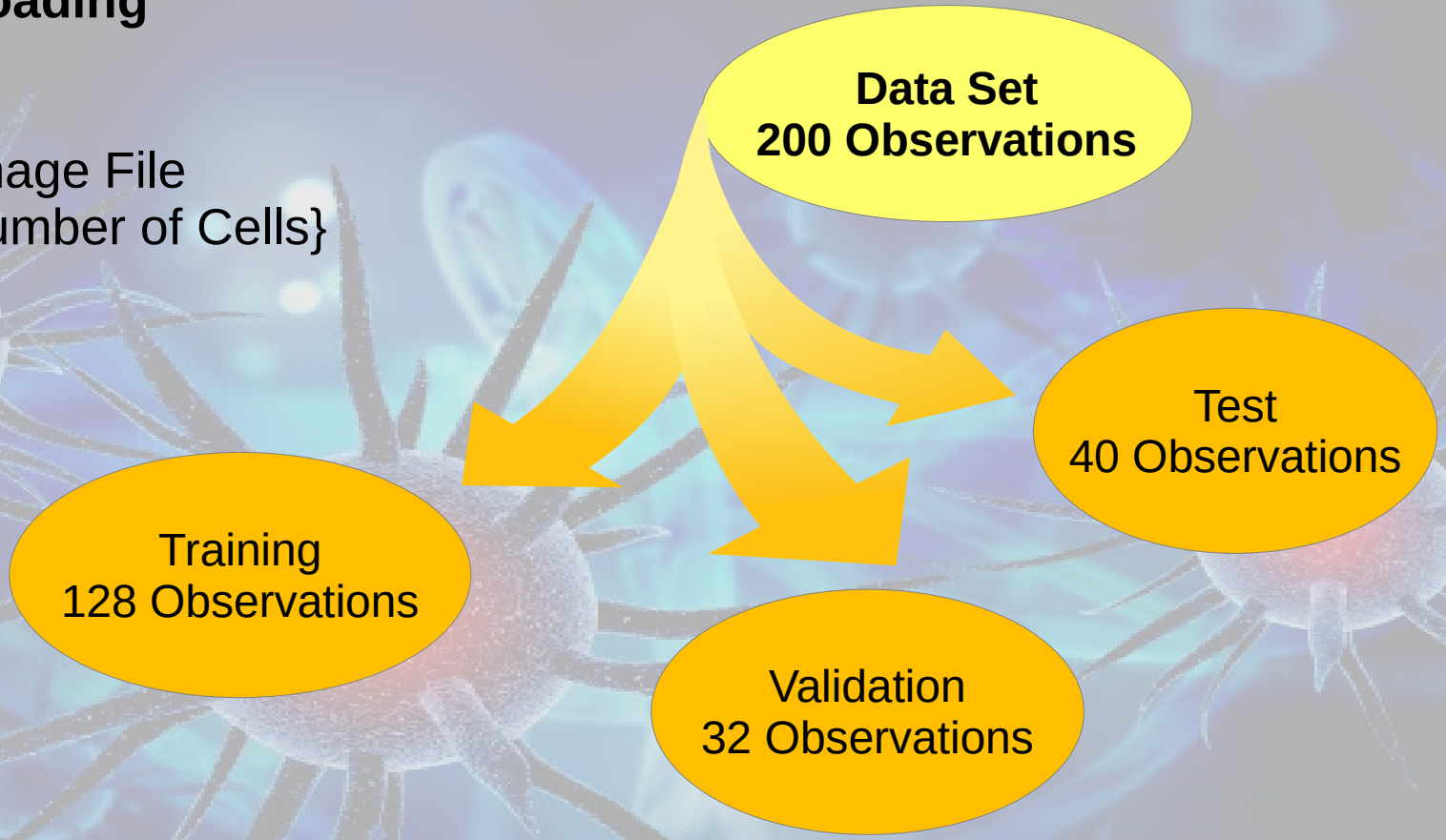




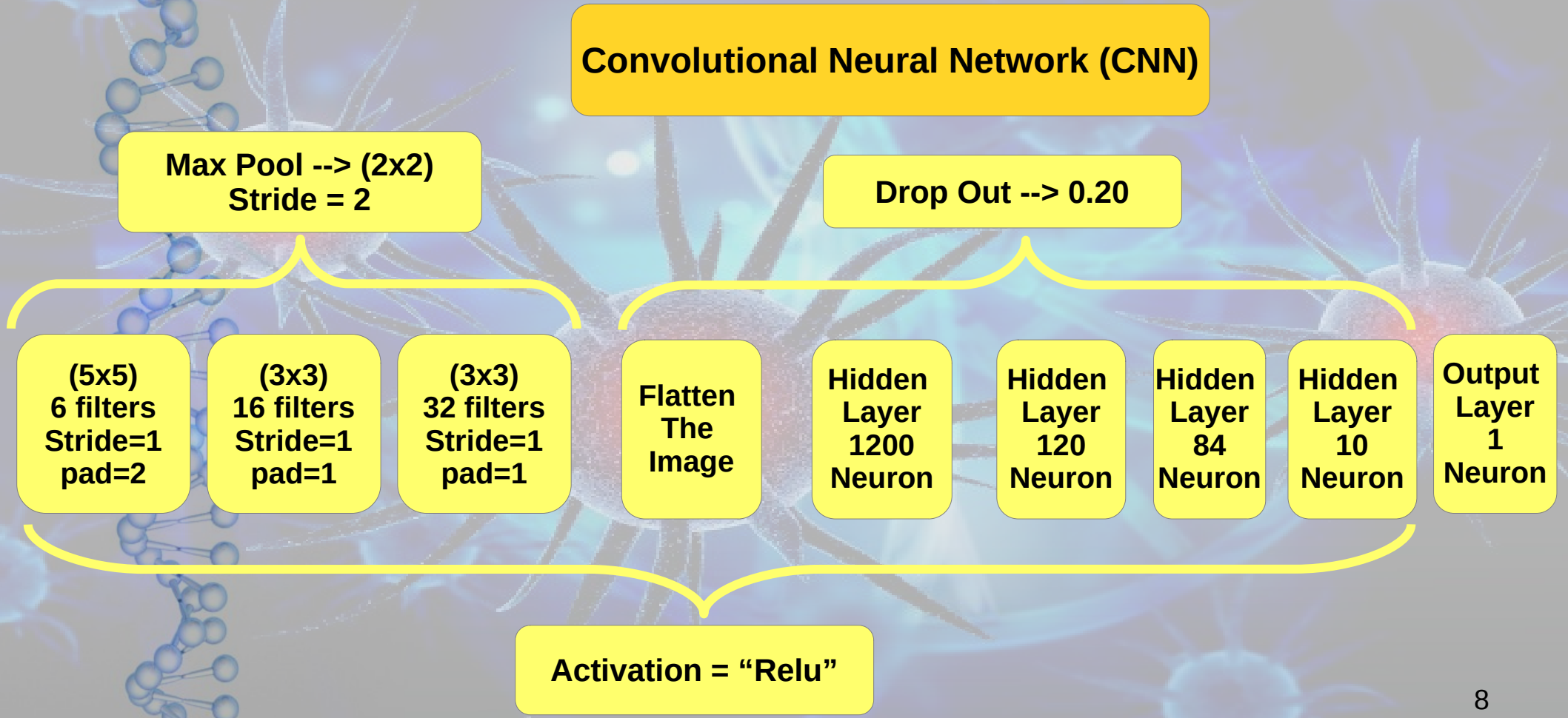


Data Loading

{ X = Image File
  Y = Number of Cells}



Network Architechture



Training & Validation

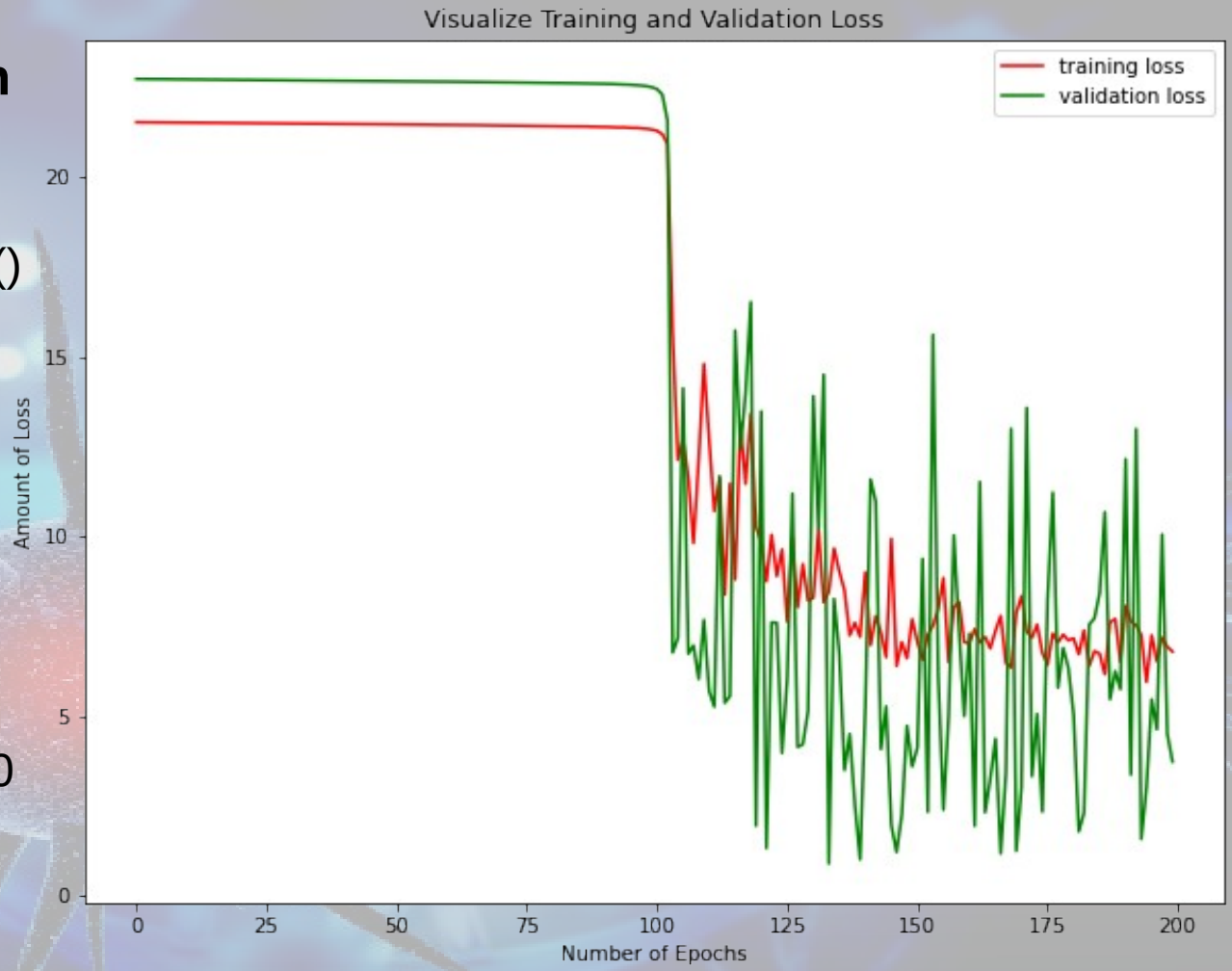
Loss Function = L1Loss()

Optimizer = “SGD”

Learning Rate = 0.0005

Batch Size 8

Number of Epochs = 200

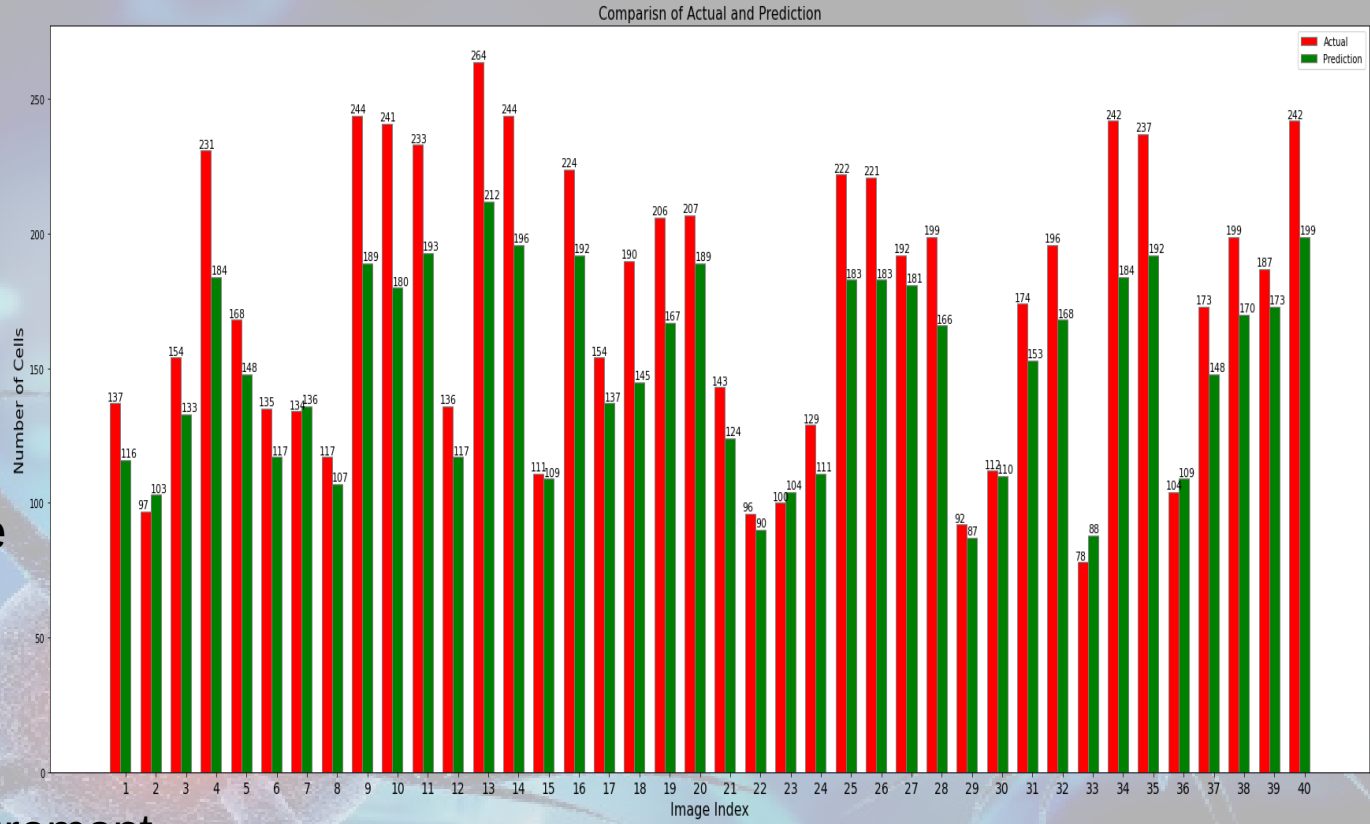


Test The Model

40 Images

Model Performence

85.32 %

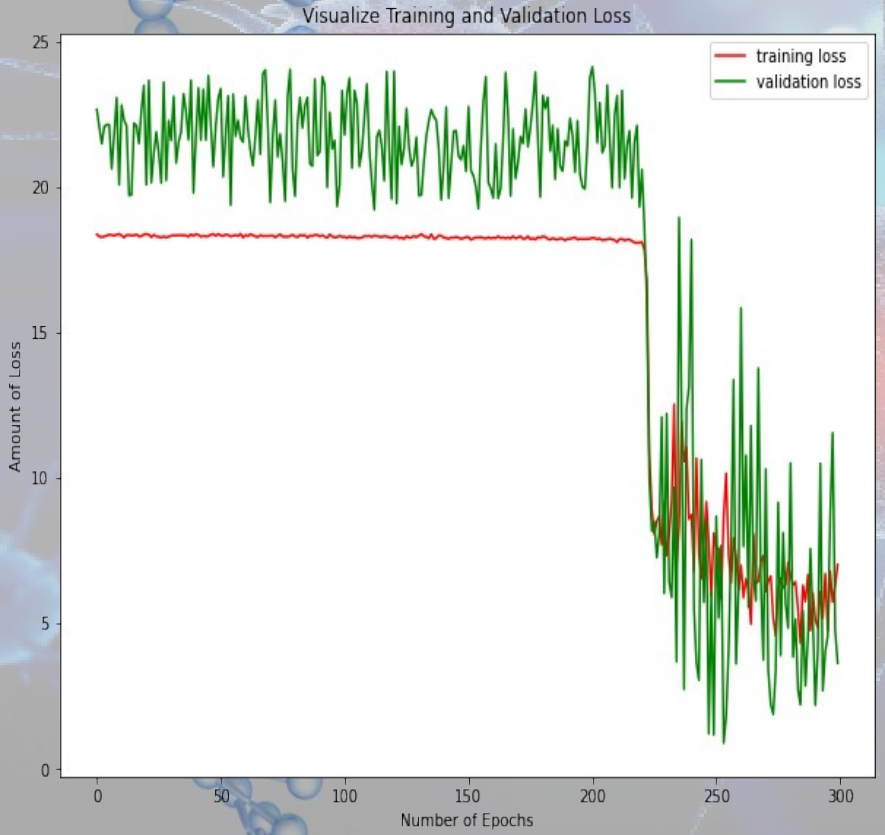


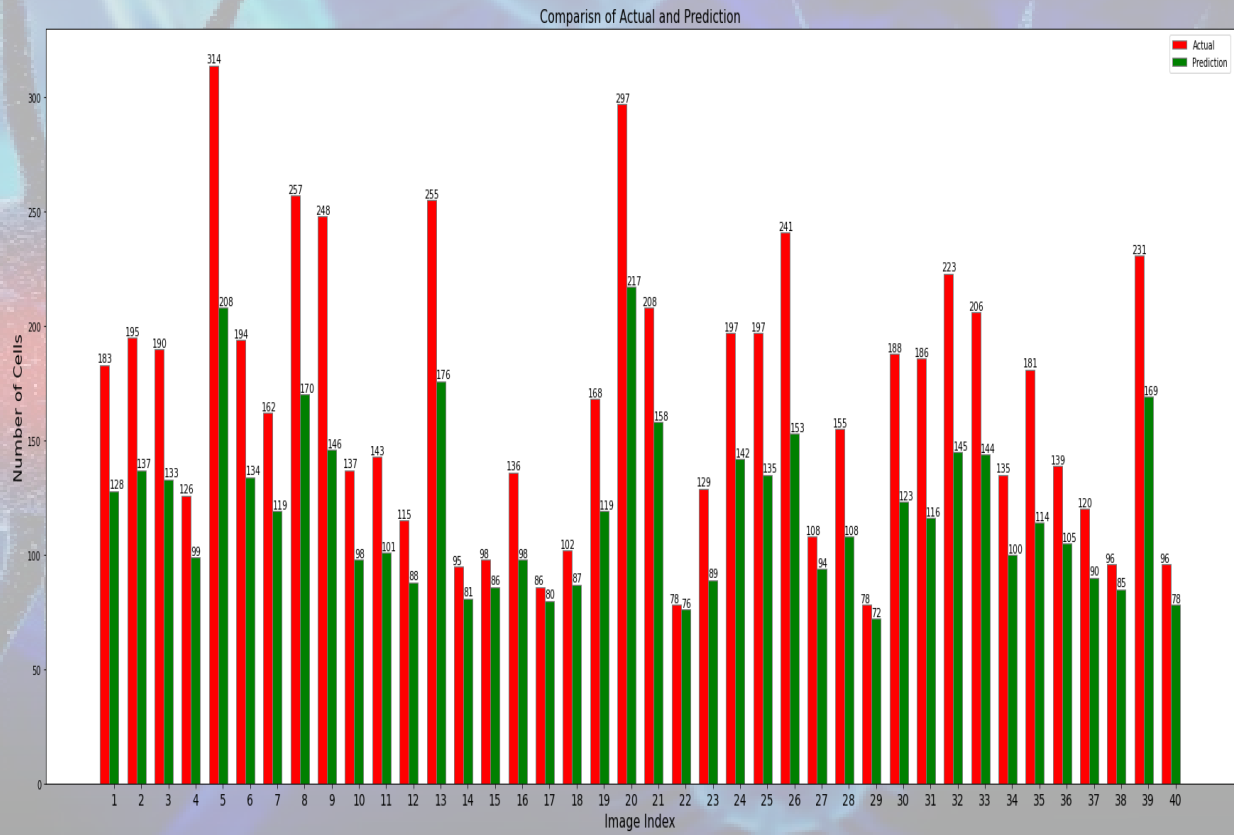
Perfomence Measurement

$$\left(1 - \frac{\sum |\,Actual\ Count\ -\ Predicted\ Count|}{\sum Actual\ Count}\right) * 100$$

Another Test Case

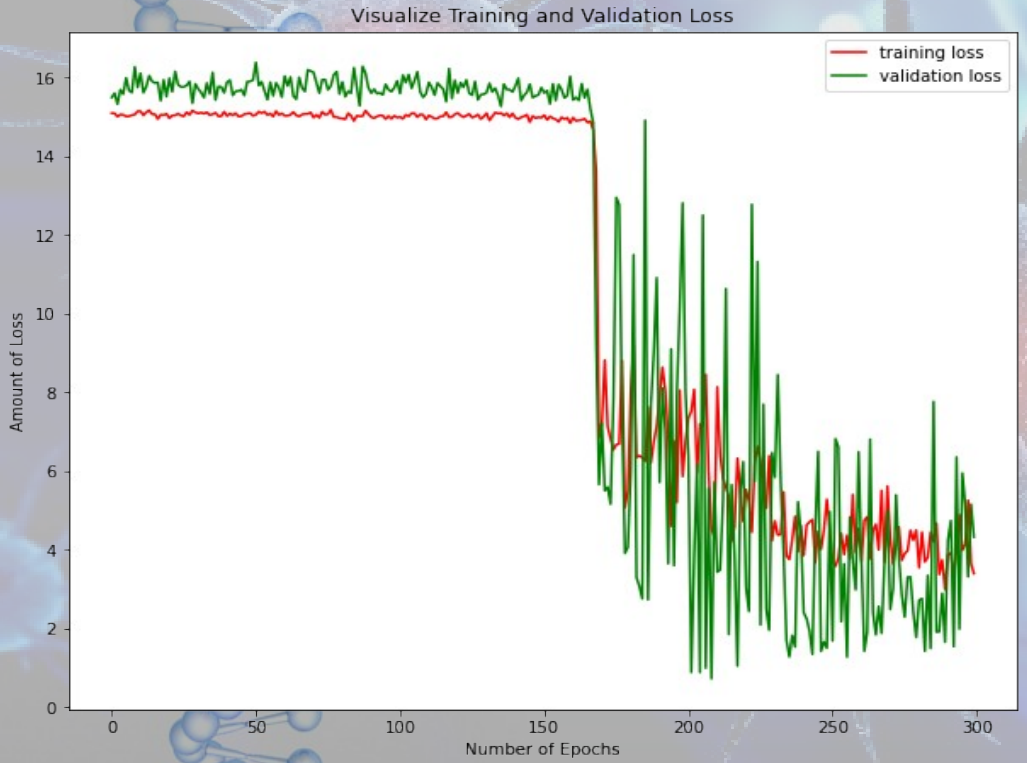
Epochs	Learning Rate	Batch Size	Performence
300	0.0005	10	83.22 %

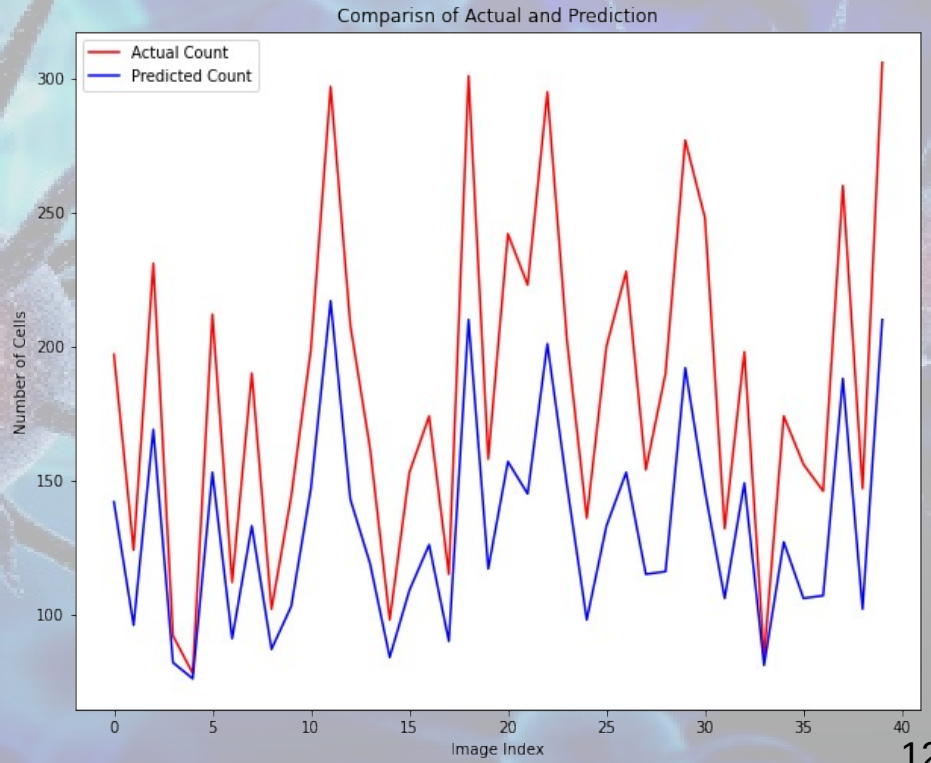




Another Test Case II

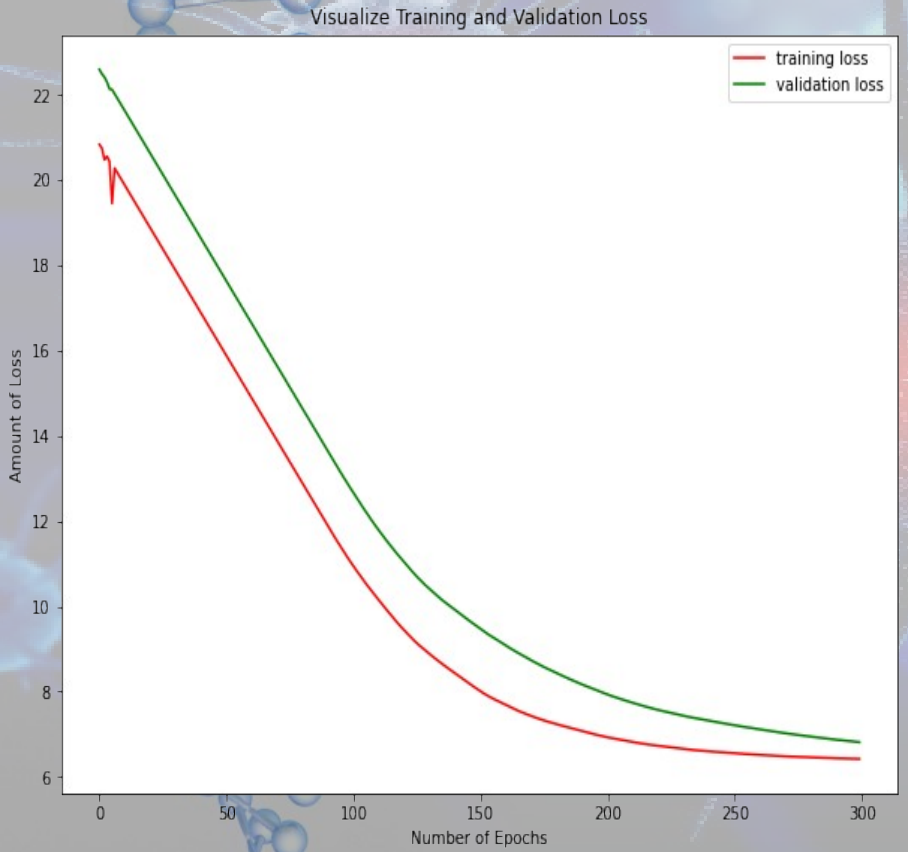
Epochs	Learning Rate	Batch Size	Performence
300	0.0005	12	71.80 %

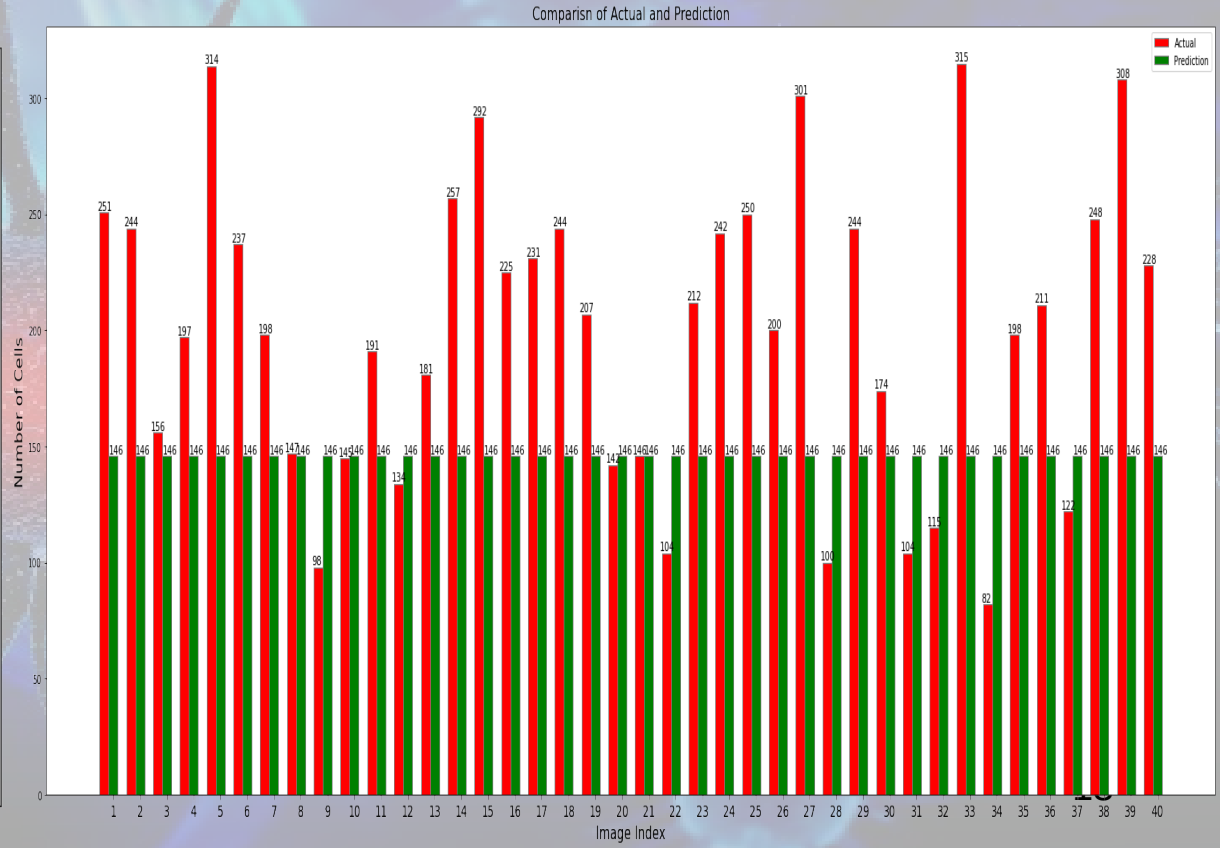




Another Test Case III

Epochs	Learning Rate	Batch Size	Momentum	Nesterov	Performence
300	0.0005	8	0.9	True	65.19 %






END