

PROJECT TITLE : [U-Net: Convolutional Networks for Biomedical Image Segmentation](#)

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Aim: Delve into the field of biomedical Image segmentation using UNET architecture.

Researches and Learning :

- Started from the very basics of Machine learning and then proceeded to deep learning.
- Explored TensorFlow's capabilities in building, training, and evaluating neural networks.
- Focused on Convolutional Neural Networks (CNN).
- Implemented data augmentation techniques to artificially expand the training dataset, enhancing model performance
- Constructed a UNET architecture from scratch using max pooling and conv2d functions of tensorflow.keras.
- Explored pre-trained models and their adaptability to the specific challenges posed by medical image datasets.
- Explored the significance of hyperparameter tuning to enhance the overall performance of the model.
- Learned a lot while coding in google collab .

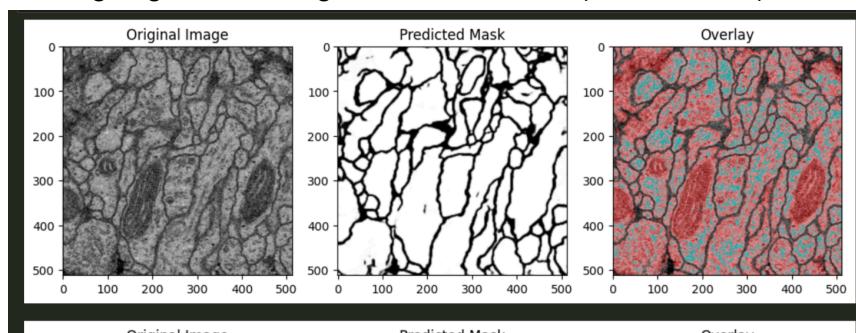
Results:

Trained my data on [isbi challenge](#) available on net,

```
Epoch 10/10
24/24 [=====] - ETA: 0s - loss: 0.0400 - accuracy: 0.9835
Epoch 10: loss improved from 0.04039 to 0.04001, saving model to unet_membrane.hdf5
24/24 [=====] - 6s 274ms/step - loss: 0.0400 - accuracy: 0.9835 - val_loss: 0.0933 - val_accuracy: 0.9656
```

Got accuracy of 0.9656 and loss of 0.09 on augmented dataset generated for testing.

On generating segmented images on new dataset (test dataset), results are:



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