Group Name: Innovators Group:9

ML+CV Combined Project: Cell Segmentation

Group Members

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Tasks performed:

Implementation of SymmetricGalu and Swish activation functions

```
class SymmetricGaLU(tf.keras.layers.Layer):
    def __init__(self, **kwargs):
        super(SymmetricGaLU, self).__init__(**kwargs)

    def call(self, x):
        a, b = tf.split(x, 2, axis=-1)
        return tf.multiply(tf.nn.tanh(a), tf.nn.sigmoid(b))

    def get_config(self):
        config = super(SymmetricGaLU, self).get_config()
        return config
```

```
class Swish(tf.keras.layers.Layer):
    def __init__(self):
        super(Swish, self).__init__()

    def call(self, inputs):
        return inputs * tf.keras.backend.sigmoid(inputs)
```

Outcomes:

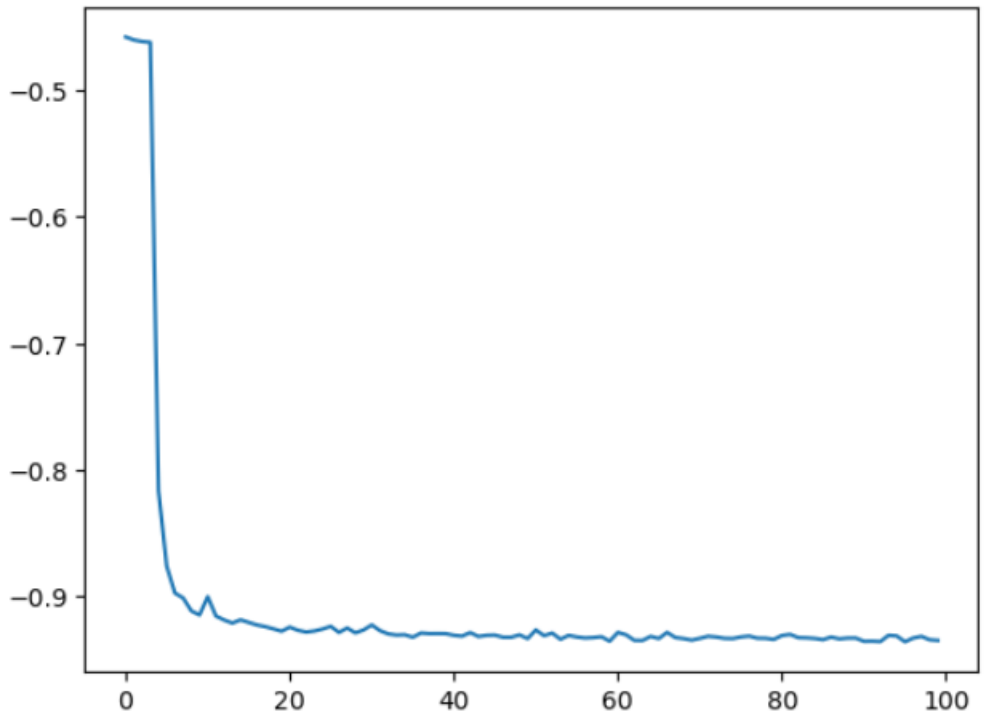
We trained our model on these activation functions and got the following results:

SymmetricGalu:

Val_Loss:

```
plt.plot(results1.history['val_loss'])
```

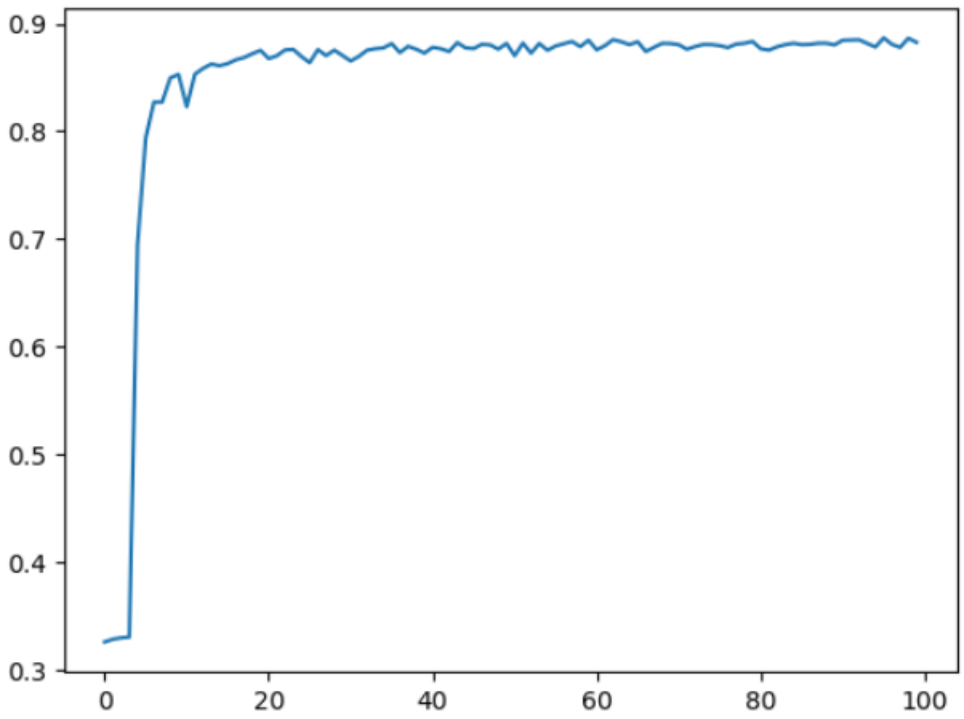
```
[<matplotlib.lines.Line2D at 0x7ff953bd0650>]
```



Val_iou:

```
plt.plot(results1.history['val_iou'])
```

```
[<matplotlib.lines.Line2D at 0x7ff952f6d590>]
```

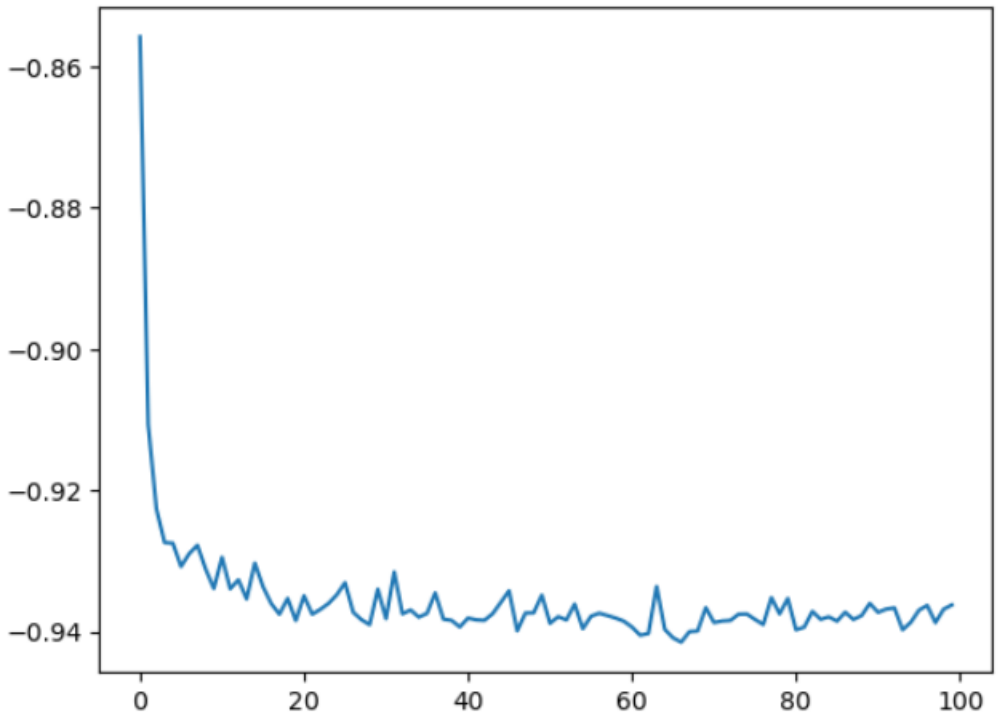


Swish:

Val_loss:

```
plt.plot(results2.history['val_loss'])
```

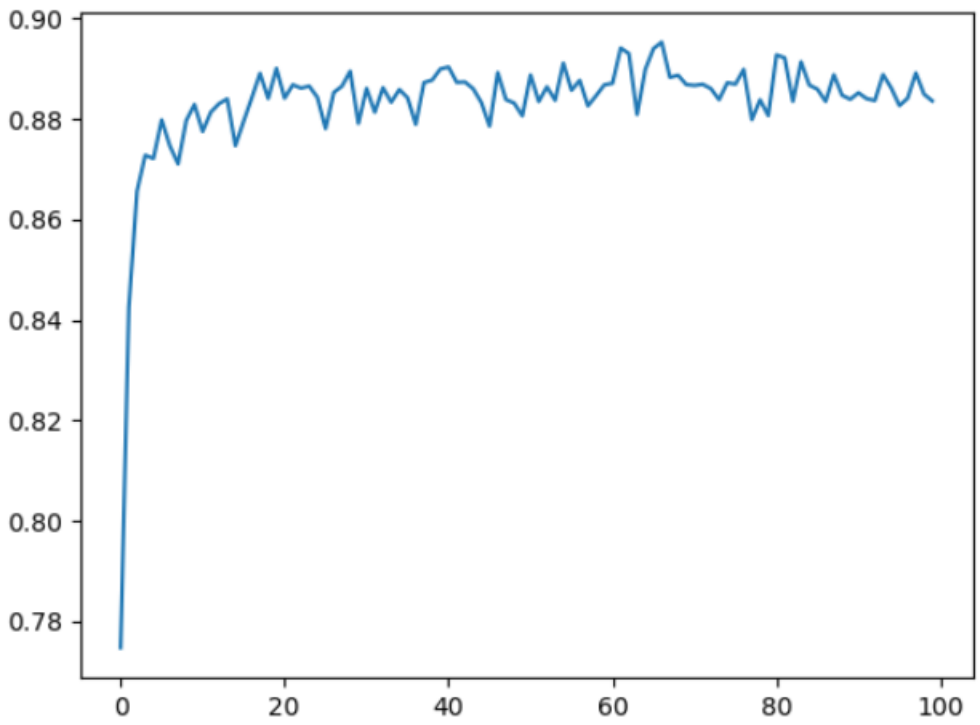
```
[<matplotlib.lines.Line2D at 0x7ff4cb202f50>]
```



Val_iou:

```
plt.plot(results2.history['val_iou'])
```

```
[<matplotlib.lines.Line2D at 0x7ff4cb1e01d0>]
```



Tasks to be performed:

We will implement TrainableLeakyReLU and ISRU activation functions