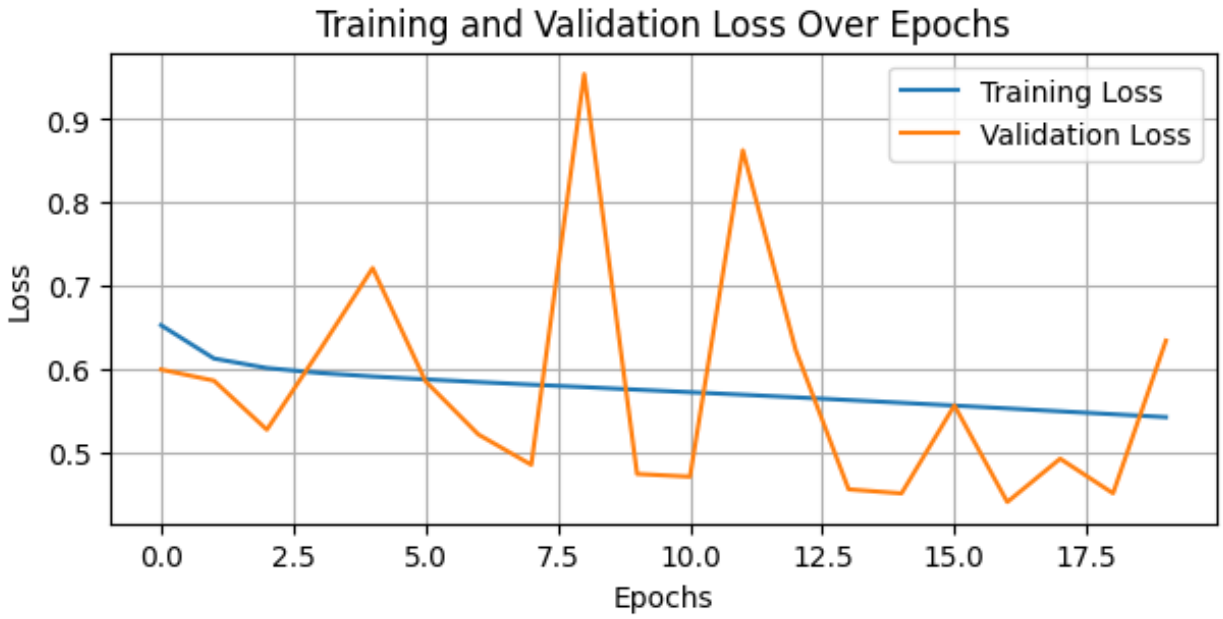
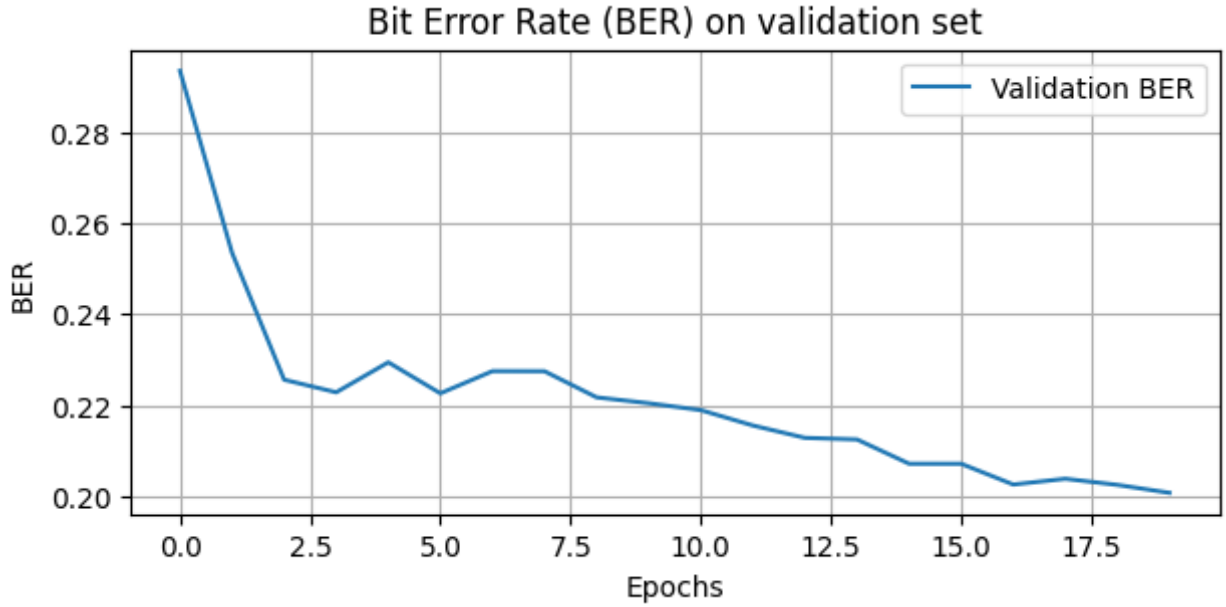
CMPE-258 Deep Learning HW-1 Documentation:

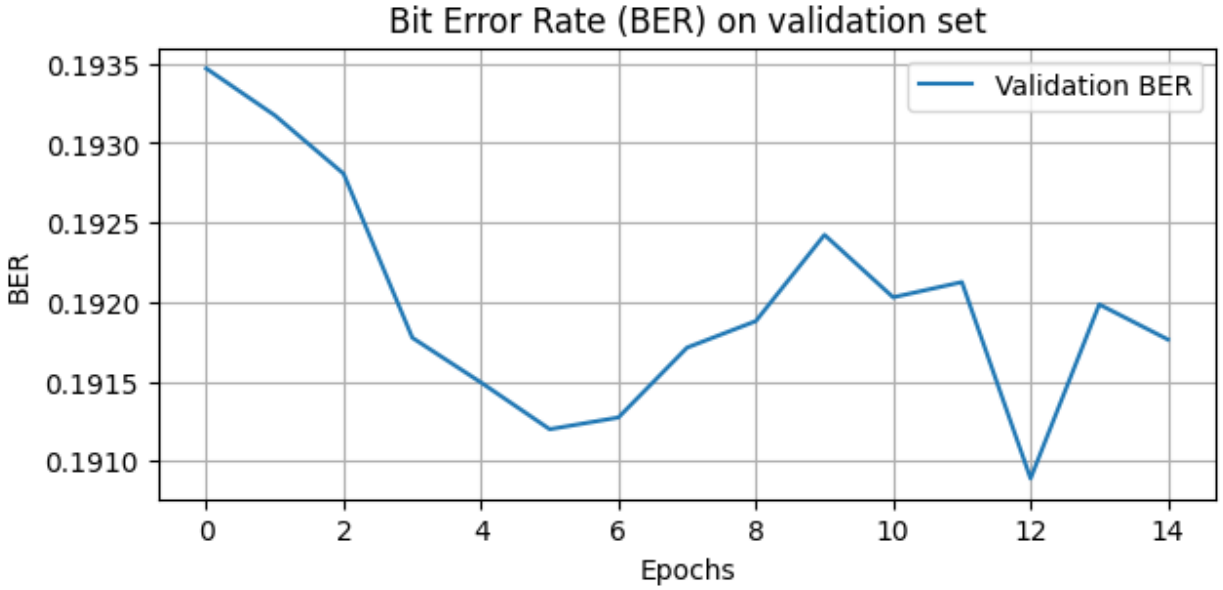
1. EnhancedSimpleModel (Default model):
    1. Best Val Loss: 0.6340
    2. Best Val BER: 0.2006
    3. Epochs: 20



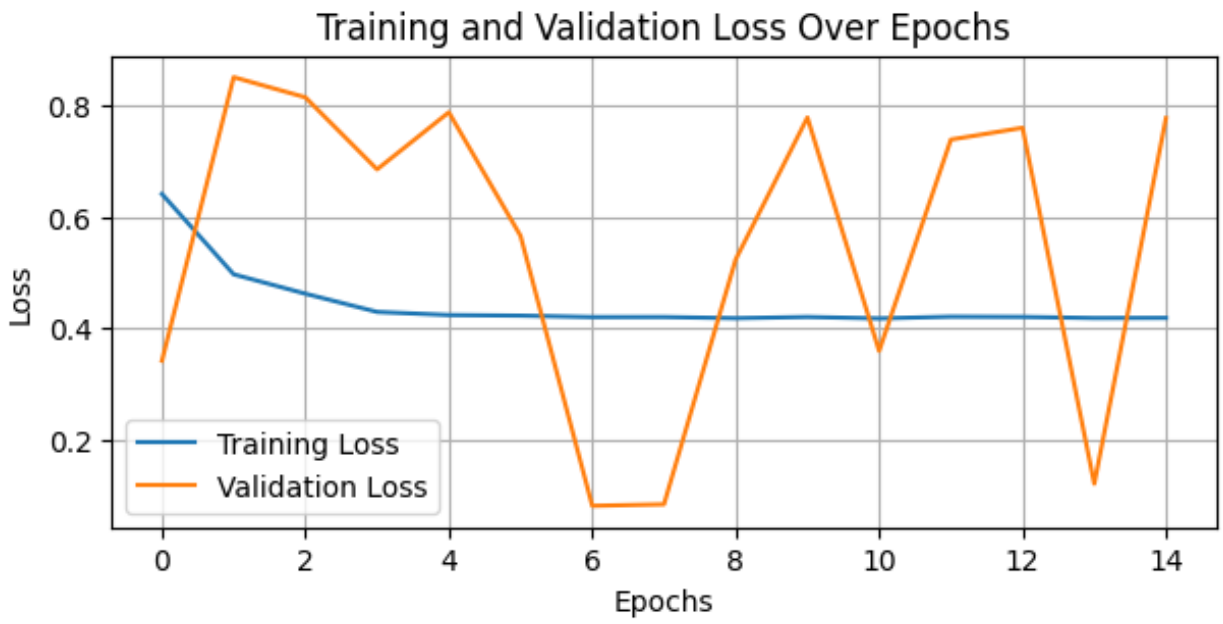


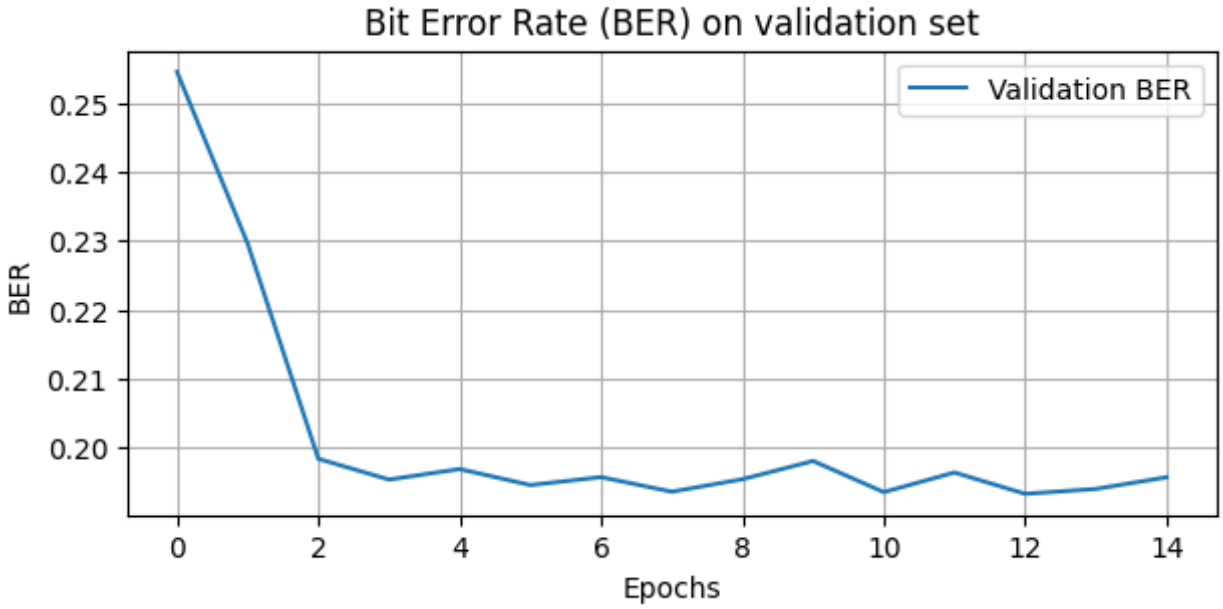
2. EnhancedSimpleModel2: Increased the number of layers and scale to 16. Also, added the learning rate scheduler.
    1. Best Val Loss: 0.4168

2. Best Val BER: 0.1918
3. Epochs: 15



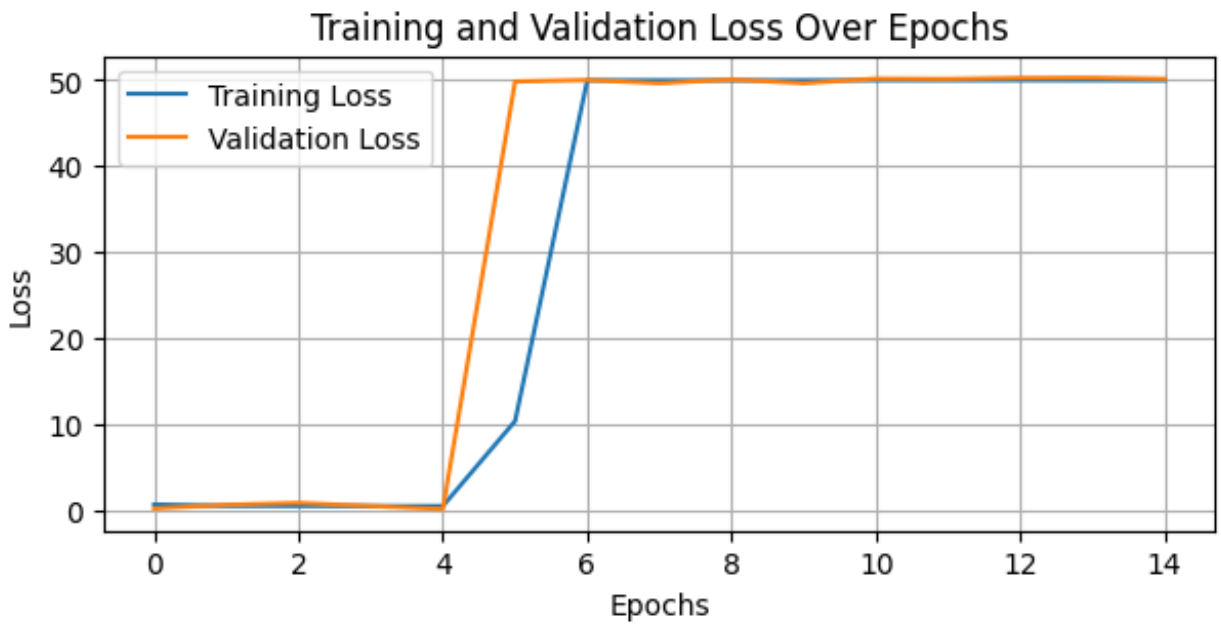
3. EnhancedSimpleModel3: Reduced the scaling factor. Added a new layer. Changed the activation function to ReLu. Adjusting the number of neurons. Trying to make the model learn non-linear complex data.
    1. Best Val Loss: 4307
    2. Best Val BER: 0.1932 at epoch 12
    3. Epochs: 15

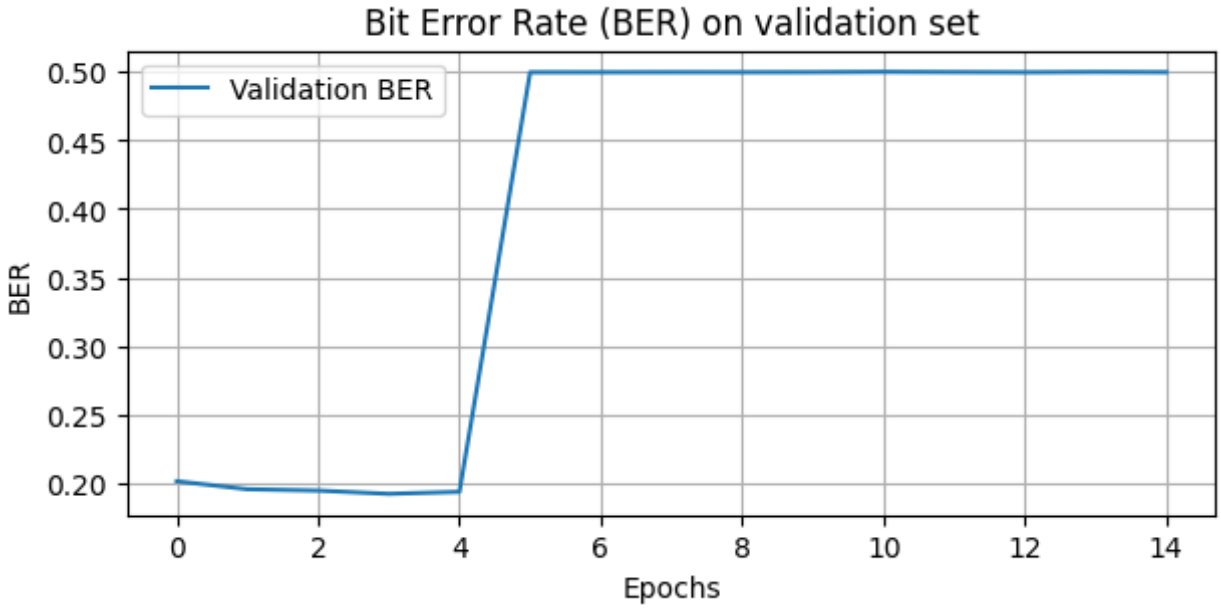




4. EnhancedSimpleModel4: Changed the activation to PReLu to tackle Dying ReLu problem.
    1. Best Val Loss: 0.42
    2. Best Val BER: 0.1933 at 4th epoch
    3. Epochs: 15

Observation: after 4th epoch, it went down the drain. Overfitting?



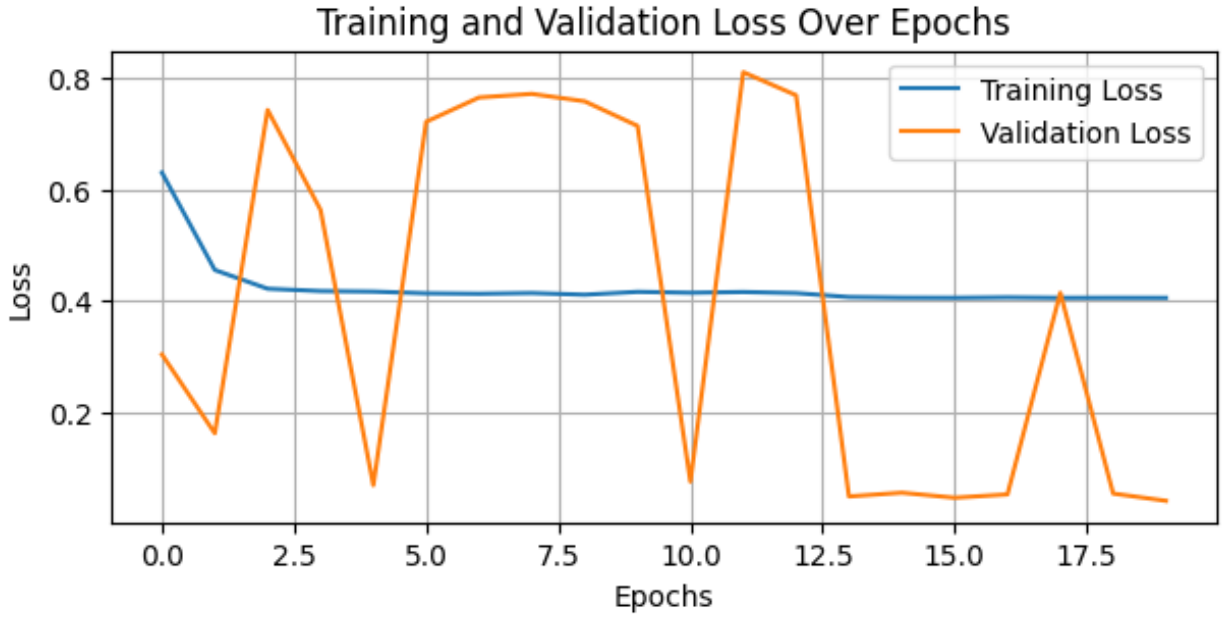


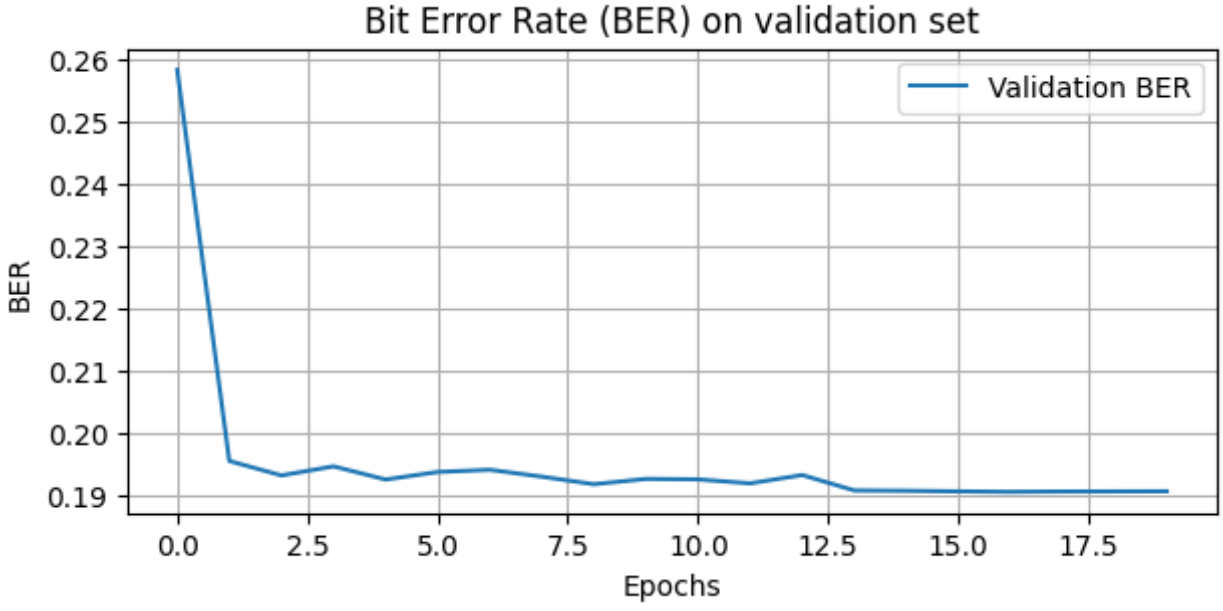
5. EnhancedSimpleModel5: Adjusting the neurons. Increased the dimensionality in model 5.
    1. Best Val Loss: 0.42
    2. Best Val BER: 0.1939
    3. Epochs: 10

6. EnhancedSimpleModel6: Adding batch normalization and dropout layers to this model.
    1. Best Val Loss: 0.50
    2. Best Val BER: 0.50
    3. Epochs: 7

Observation: Doesn't look like it is training anything. Maybe too many dropouts and too much generalization.

7. EnhancedSimpleModel7: Simple model is better for this complex dataset is my conclusion.
    1. Best Val Loss: 0.41
    2. Best Val BER: 0.1907
    3. Epochs: 20





8. EnhancedSimpleModel8: Simplifying the model even more.
    1. Best Val Loss: 0.41
    2. Best Val BER: 0.1906
    3. Epochs: 20