

Assignment 3- ML2
MT19AI032

Questions 2)
b) Cross Entropy Loss

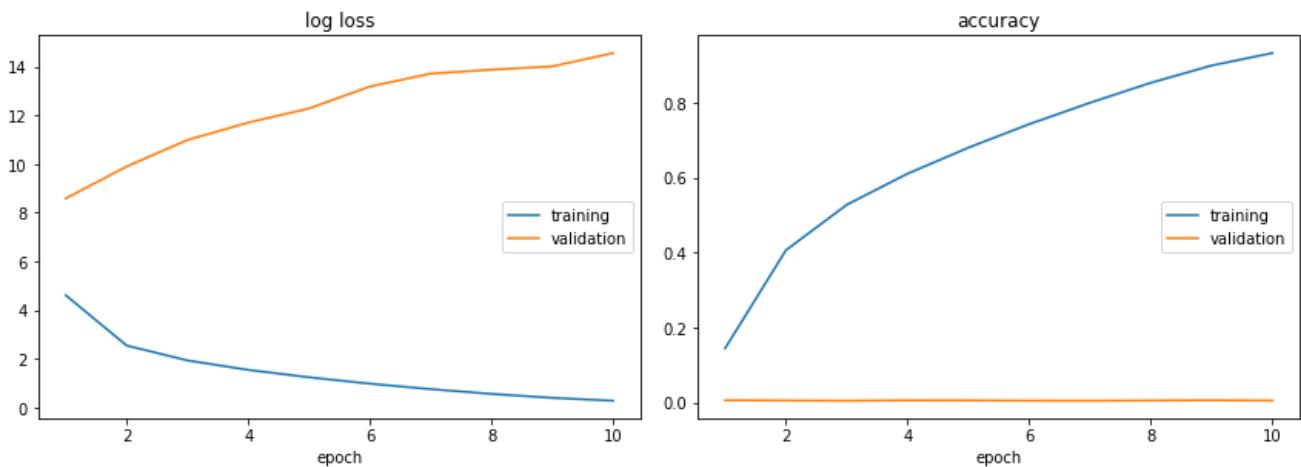


Figure 1 : Training vs Validation loss on 10 epochs

a) Focal Loss

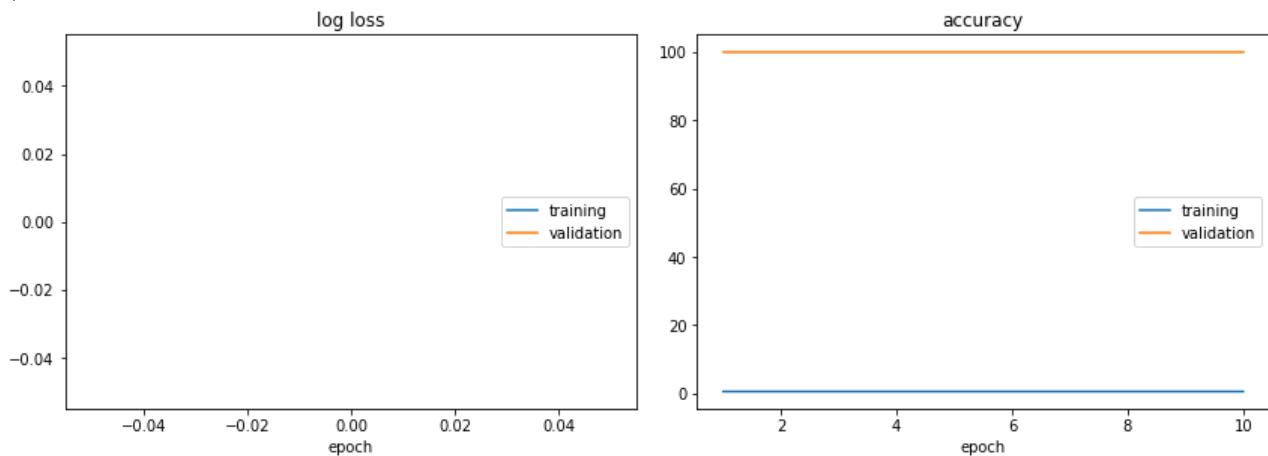


Figure 2: Training vs Validation Loss on 10 epochs

Metrics b)

Accuracy	84%
Micro specificity (precision)	84%
Micro sensitivity (recall)	81%

Question 4

In this work VGG 16 is used as an Encoder, It is a very good architecture for benchmarking on a particular task. Also, pre-trained networks for VGG are available freely on the internet, so it is commonly used out of the box for various applications.

LSTM is used as Decoder, LSTM gives us the most Control-ability and thus, Better Results.

Performance of Decoder Model is measured by BLEU Score which measure the word overlap between generated and reference captions.

Visual Examples of Image Captioning



Two different breeds of brown and white dogs play on the beach .

Two dogs are making a turn on a soft sand beach .

Two dogs playing in the sand at the beach .

Two dogs playing together on a beach .

Two large tan dogs play along a sandy beach



A brown and white dog is running through the snow .

A dog is running in the snow

A dog running through snow .

a white and brown dog is running through a snow covered field .

The white and brown dog is running over the surface of the snow



A child playing on a rope net .

A little girl climbing on red roping .

A little girl in pink climbs a rope bridge at the park .

A small child grips onto the red ropes at the playground .

The small child climbs on a red ropes on a playground



A child in a pink dress is climbing up a set of stairs in an entry way .

A girl going into a wooden building .

A little girl climbing into a wooden playhouse .

A little girl climbing the stairs to her playhouse .

A little girl in a pink dress going into a wooden cabin.



A black dog and a spotted dog are fighting

A black dog and a tri-colored dog playing with each other on the road .
A black dog and a white dog with brown spots are staring at each other in the street .
Two dogs of different breeds looking at each other on the road .
Two dogs on pavement moving toward each other .



A little girl covered in paint sits in front of a painted rainbow with her hands in a bowl .

A little girl is sitting in front of a large painted rainbow .
A small girl in the grass plays with fingerpaints in front of a white canvas with a rainbow on it .
There is a girl with pigtails sitting in front of a rainbow painting .
Young girl with pigtails painting outside in the grass



A man lays on a bench while his dog sits by him .

A man lays on the bench to which a white dog is also tied .
a man sleeping on a bench outside with a white and black dog sitting next to him .
A shirtless man lies on a park bench with his dog .
man laying on bench holding leash of dog sitting on ground



A black dog leaps over a log .

A grey dog is leaping over a fallen tree .

A large black dog leaps a fallen log .

A mottled black and grey dog in a blue collar jumping over a fallen tree .

The black dog jumped the tree stump .



A brown dog chases the water from a sprinkler on a lawn .

a brown dog plays with the hose .

A brown dog running on a lawn near a garden hose

A dog is playing with a hose .

Large brown dog running away from the sprinkler in the grass .

Failed Example



Agrmax Prediction : A little girl in a a red coat plays in snow .

Beam Search Prediction with Index = 3 : A little girl plays in the snow in a brown jacket and red shorts on a harness .

Beam Search Prediction with Index = 5 : Little girl in red coat going down a hill.

Beam Search Prediction with Index = 7 : Little girl in red coat going down a hill.

Question 3



Output

Training

Epoch [35/35] complete.

Train Loss: 9.014. Val Loss: 32.097 Original Sentence: This is an example to check how our model is performing.

Translated Sentence: Hier ist ein Beispiel , um prüfen wie unser Modell ist . Wir spielen . </s>

Testing

```
sentence = "Isn't Natural language processing just awesome? Please do let me know in the comments."
```

```
print(greedy_decode_sentence(model, sentence))
```

Ist es nicht einfach toll ? Bitte lassen Sie mich gerne in den Kommentare kennen . </s>