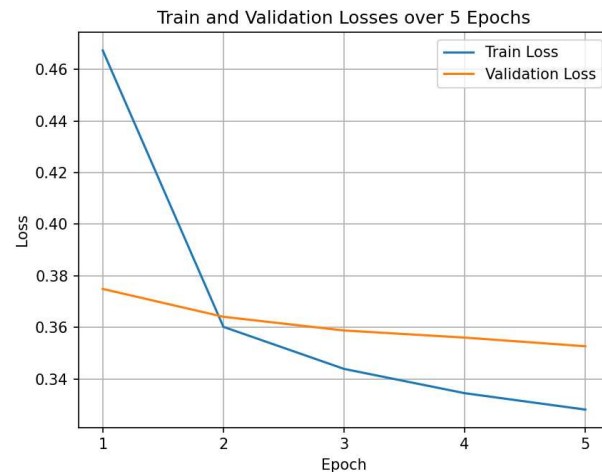# Exercise 5 – Machine Learning Methods

Dana Aviran

6 - Sentiment Analysis Task

Test accuracy at the end of training: 0.8517423272132874

Training and validation losses over epochs:

Explanation:
The graph plots the training and validation losses of the model, a transformer with only one transformer block, over 5 training epochs and a learning rate of 0.0001. It can be seen from the graph that after the second epoch, the validation loss is higher than the training loss over the remaining epochs while the validation loss gets smaller at a slower rate. A possible explanation is that the model is overfitting the training data, which means that it might have learned to fit the training data too closely, capturing noise or irrelevant details that don't generalize well to new data. This results in a higher validation loss as the model fails to make accurate predictions on unseen examples.

Numeric results over epochs:

Epoch 1/5, Train Loss: 0.4673322956800461, Train Accuracy: 0.7772499918937683

Validation Loss: 0.3749387618272927, Accuracy: 0.8387739062309265

Test Loss: 0.37514412491951526, Accuracy: 0.8364769816398621

Epoch 2/5, Train Loss: 0.3602512192487717, Train Accuracy: 0.8456000089645386

Validation Loss: 0.3641416111569496, Accuracy: 0.8397691249847412

Test Loss: 0.36042059603078136, Accuracy: 0.8422314524650574

Epoch 3/5, Train Loss: 0.34395359358787536, Train Accuracy: 0.8535500168800354

Validation Loss: 0.35883747079190176, Accuracy: 0.8433519005775452

Test Loss: 0.3531504663164773, Accuracy: 0.8467870950698853

Epoch 4/5, Train Loss: 0.3345411633849144, Train Accuracy: 0.8574000000953674

Validation Loss: 0.35607969210406015, Accuracy: 0.8453423380851746

Test Loss: 0.34987182717036713, Accuracy: 0.8486253023147583

Epoch 5/5, Train Loss: 0.3281898899793625, Train Accuracy: 0.8607000112533569

Validation Loss: 0.35272559286302824, Accuracy: 0.8493232727050781

Test Loss: 0.3468958002126888, Accuracy: 0.8517423272132874

7 - Text Generation Task – Bonus

10 two-word prefixes chosen:

1. SpongeBob SquarePants
2. The big
3. Please forgive
4. Apple pie
5. Pizza delivery
6. The best
7. Prime Minister
8. The queen
9. Best singer
10. My name

GPT-2 Generations:

SpongeBob SquarePants

```
SpongeBob SquarePants

Level 1 - 100 Starring Paul Dadi
The Librarians
Level
--------------------------------------------------------------------------------
SpongeBob SquarePants for me. Just because the game's got that "Wizards Of
the Coast" theme doesn't
--------------------------------------------------------------------------------
SpongeBob SquarePants
BoomBang Bang Bang Bang Bang Bang Bang Bang Bang BooooooooooooooooB
--------------------------------------------------------------------------------
SpongeBob SquarePants" a popular YouTube video clip is showing a man getting
dressed up all alone, but does not say
--------------------------------------------------------------------------------
SpongeBob SquarePants
"Pork Pie"
"Bubbling Pumps and Peanut Butter Panc
```

The big

```
The big question, though, is whether the Trump administration is really
about transparency, or who is paying for it
--------------------------------------------------------------------------------
The big, bad guys, who you can't talk about, and don't care who it is
because you
--------------------------------------------------------------------------------
The big point is that this is an issue that needs to be confronted in the
new political future of Canada.
--------------------------------------------------------------------------------
The big issue here is the power in the system: when you have multiple users,
you can get a lot
--------------------------------------------------------------------------------
The big story is that this is a "superstorm" – an event that's never been
seen before,
```

Please forgive

```
Please forgive my not having played the last game."

As was the way it was written, this is
--------------------------------------------------------------------------------
Please forgive my not-so-subtle comments when my response might have been
more appropriate. But in light
--------------------------------------------------------------------------------
```

Please forgive me if the idea of having no family or a home for our son
became so overwhelming," he wrote

Please forgive I am such a douche.

So, now you see how I'm able to turn

Please forgive us," she told him.

A small circle erupted around the young man."

Apple pie

Apple pieced together. In the middle of it is about 5 1/2 ounces of fresh
black walnuts

Apple pie-based experience.
You can also connect to a server through the Web browser, just like
----
Apple pie chart of 2016 in 2014

This infographic is a composite of news reports and reports from around the
----
Apple pieced together the story in great detail over several pages.
"I'm really delighted. We

Apple pie. With many users already aware of their own pies baked with Apple
pie, Apple's pies will not

Pizza Delivery

Pizza delivery.

As a kid (and a grown-up!) I would have had my pizza ordered

Pizza delivery for $2.99. To order Pizza Express, go to the new restaurant
and go to the

Pizza delivery in a restaurant, even with a good chef, will require a much
higher level of dedication and diligence

Pizza delivery company PizzaDot will be opening at the former McDonalds
building in West Hollywood on Saturday, March

Pizza delivery.

This is where most of the dough comes from, or if it is, it's

The best

The best thing about running a game is that you can create a system of
learning outcomes, and then make decisions

The best one we could hope for is that we learn some lessons from our past
and learn about what is required

The best part about that was he didn't stop until we were at the end."

Sutton,

The best thing about this is that I can't help it. I think some of their
songs and lyrics are

The best way to do it with this approach?

It's not really a strategy. That will happen

Prime Minister

Prime Minister Benjamin Netanyahu has also denounced the Israeli move,
urging the West to stop attacking the Gaza Strip, saying

Prime Minister Narendra Modi, who has also been facing criticism for the
government's handling of the drought, is in

Prime Minister Najib Razak was a major proponent for "rebuilding the Iraqi
military," despite the country's

Prime Minister Stephen Harper would agree to a deal with the United States,
but only if there is a "fair

Prime Minister Rajoy:

The new Prime Minister will join in an important dialogue on social issues
in our

The queen

The queen and the rest of her tribe were captured last night and taken to
the castle.<|endoftext|>One day after

The queen had died of natural causes in 1839, as they called it, and her
family had to make

The queen will have her daughter "to look for a way out of the hole" from
her father's estate

The queen was too busy waiting to see the sun set or the night fell. She
took notice of the light

The queen gave them no rest until she got the word out, when she was told to
stop it.

Best singer

Best singer/songwriter: In '50s films, "It" was the biggest hit of the '

Best singer-songwriter and producer. While being in Los Angeles, she
attended the premiere of the music video

Best singer and songwriter, she's the most famous woman in the world," she
said. "That's

Best singer/songwriter, you are the voice of my dreams." He added "I have
been through so

Best singer, actor, poet, and writer – has written for various publications
– including The Observer, The Independent

My name

My name doesn't come from a name, but rather from a country," says Mr.
Shippert.

My name is John. I work in the financial industry, and we're looking for
people to represent you in

My name is Dan. I am a retired Army major from North Carolina who was in
World War II and was

My name is John Adams," says John Adams, who served as the United States
secretary of state from 1903 to

My name is Mike," Mr. Shilker said.

He was an American citizen, born in