The suggested structure for the report consists of the following sections: Introduction, Theory, Data, Method, Results, Discussion, Conclusion. In the previous phases you should already have produced drafts of the sections on Data, Method, and Results.

The purpose of the Introduction is to introduce the task or research question that you have addressed in your project. What did you do, and why did you do it? The Theory section should briefly present relevant theoretical background for your project, in particular machine learning models that were not covered in the course (if any).

Most of your work should go into the Discussion and the Conclusion. In the Discussion you present your analysis of the results that you obtained, discuss the possibilities and limitations of your approach, and compare your study to related work. The Conclusion should build on the Discussion and answer the question what new knowledge you take away from your project.

**Sentimental Analysis of Apple customers reviews in Twitter using** **BERTBASE model**

**Introduction**

In this project the tweets of Apple customers in Twitter have been investigated. These reviews include three various labels Positive, Negative and Neutral. If we want to apply a deep learning model on a text dataset, where the words and text are our input, the learning method cannot recognize the words, definition of those words, emotional load of the word, the usual position of these words and so on. Using BERTBASE model which is a powerful pre-trained NLP model can help us to implement a deep learning model on a text dataset which is the reviews of Apple customers in this project.

**Theory**

As it has been mentioned in introduction, the BERTBASE model, an encoder, decoder model with attention heads has been applied. One of the most common tasks in NLP is Text classification. Various applications can be applied by this method such as sentiment analysis, spam filtering, news categorization, etc.

Diagram

Description automatically generated

The BERT variations include two pre-trained:

* Base model which neural network architecture includes 12-layer (transfer block), 768-hidden size, 12-self attention heads, 110M total parameters.
* Large model where neural network architecture consists of 24-layer (transfer block), 1024- hidden size, 16-self attention heads, 340M total parameters.

Graphical user interface, diagram, application

Description automatically generated

The BERTBASE model has been trained on a huge amount of text database to have the knowledge about most of the words, word definitions and moreover the emotional load of words. This pre-trained model has the recognition about words as a specific input in advance as an example when we feed this model with “Hello”, the BERTBASE model knows that what the meaning of this word is, where this word can be used, what the emotional load of the word is and so on, then it can be fine tunned for the sentiment analysis in this task.

**Data**

**Method**

**Results**

**Discussion**

**Conclusion**

**Reference**

<https://arxiv.org/pdf/1706.03762.pdf>

<https://wandb.ai/akshayuppal12/Finetune-BERT-Text-Classification/reports/Text-Classification-With-BERT--Vmlldzo4OTk4MzY>

<https://arxiv.org/pdf/1810.04805.pdf>