Model parameters

* Preprocess
  + Clean and normalize text
  + Tokenize with Spacy’s en\_core\_web\_lg
  + Lemmatize with NLTK’s wordnet lemmatizer
  + Removed outlier text lengths less than 2 tokens and more than 1000 tokens
* Training
  + Trained on 50% of dataset for time
  + 3 epochs, batch size 16
  + Max text length is 300
    - Truncates when greater than
    - Increases froze computer and increased training time
  + Adam optimizer
    - Learning rate = .00005
  + Categorical cross entropy loss function for one-hot encoded labels
* Evaluates
  + Validation accuracy
  + F1 score
  + Saves best model based per validation accuracy
* Returns files
  + Model config.json
  + Special\_tokens\_map.json
  + Tokenizer\_config.json
  + Vocab.tct
  + Tf\_model.h5

[c:\Users\schil\AppData\Local\Programs\Python\Python311\Lib\site-packages\tqdm\auto.py:21](file:///C:\Users\schil\AppData\Local\Programs\Python\Python311\Lib\site-packages\tqdm\auto.py:21): TqdmWarning: IProgress not found. Please update jupyter and ipywidgets. See <https://ipywidgets.readthedocs.io/en/stable/user_install.html>

from .autonotebook import tqdm as notebook\_tqdm

loading data...

loaded

cleaning data...

cleaned

training model...

Some layers from the model checkpoint at google/electra-base-discriminator were not used when initializing TFElectraForSequenceClassification: ['discriminator\_predictions']

- This IS expected if you are initializing TFElectraForSequenceClassification from the checkpoint of a model trained on another task or with another architecture (e.g. initializing a BertForSequenceClassification model from a BertForPreTraining model).

- This IS NOT expected if you are initializing TFElectraForSequenceClassification from the checkpoint of a model that you expect to be exactly identical (initializing a BertForSequenceClassification model from a BertForSequenceClassification model).

Some layers of TFElectraForSequenceClassification were not initialized from the model checkpoint at google/electra-base-discriminator and are newly initialized: ['classifier']

You should probably TRAIN this model on a down-stream task to be able to use it for predictions and inference.

Epoch 1/3

1690/1690 [==============================] - 26903s 16s/step - loss: 0.4870 - accuracy: 0.8064 - precision: 0.7846 - recall: 0.8146 - val\_loss: 0.3795 - val\_accuracy: 0.8611 - val\_precision: 0.7321 - val\_recall: 0.9278

Epoch 2/3

1690/1690 [==============================] - 26592s 16s/step - loss: 0.3031 - accuracy: 0.8859 - precision: 0.8078 - recall: 0.9316 - val\_loss: 0.3693 - val\_accuracy: 0.8611 - val\_precision: 0.7559 - val\_recall: 0.9268

Epoch 3/3

1690/1690 [==============================] - 26245s 16s/step - loss: 0.2173 - accuracy: 0.9205 - precision: 0.8446 - recall: 0.9569 - val\_loss: 0.3668 - val\_accuracy: 0.8727 - val\_precision: 0.7939 - val\_recall: 0.9330

118/118 [==============================] - 1052s 9s/step - loss: 0.3698 - accuracy: 0.8711 - precision: 0.7968 - recall: 0.9305

[0.3697589039802551, 0.8711051940917969, 0.7968072891235352, 0.9304926991462708]

Evaluation Result on Test Data:

- Loss: 0.3697589039802551

- Accuracy: 0.8711051940917969

- Precision: 0.7968072891235352

- Recall: 0.9304926991462708

- F1 Score: 0.8584766632212472