

▼ Install Dependencies and Bring in Data

```
!pip install tensorflow tensorflow-gpu pandas matplotlib sklearn
```

```
Looking in indexes: https://pypi.org/simple, https://us-python.pkg.dev/colab-wheels/public/simple/
Requirement already satisfied: tensorflow in /usr/local/lib/python3.8/dist-packages (2.9.2)
Requirement already satisfied: tensorflow-gpu in /usr/local/lib/python3.8/dist-packages (2.9.3)
Requirement already satisfied: pandas in /usr/local/lib/python3.8/dist-packages (1.3.5)
Requirement already satisfied: matplotlib in /usr/local/lib/python3.8/dist-packages (3.2.2)
Requirement already satisfied: sklearn in /usr/local/lib/python3.8/dist-packages (0.0.post1)
Requirement already satisfied: termcolor>=1.1.0 in /usr/local/lib/python3.8/dist-packages (from tensorflow) (2.2.0)
Requirement already satisfied: absl-py>=1.0.0 in /usr/local/lib/python3.8/dist-packages (from tensorflow) (1.3.0)
Requirement already satisfied: typing-extensions>=3.6.6 in /usr/local/lib/python3.8/dist-packages (from tensorflow) (4.4.0)
Requirement already satisfied: tensorflow-io-gcs-filesystem>=0.23.1 in /usr/local/lib/python3.8/dist-packages (from tensorflow) (0.29.0)
Requirement already satisfied: libclang>=13.0.0 in /usr/local/lib/python3.8/dist-packages (from tensorflow) (14.0.6)
Requirement already satisfied: keras-preprocessing>=1.1.1 in /usr/local/lib/python3.8/dist-packages (from tensorflow) (1.1.2)
Requirement already satisfied: opt-einsum>=2.3.2 in /usr/local/lib/python3.8/dist-packages (from tensorflow) (3.3.0)
Requirement already satisfied: packaging in /usr/local/lib/python3.8/dist-packages (from tensorflow) (21.3)
Requirement already satisfied: tensorflow-estimator<2.10.0,>=2.9.0rc0 in /usr/local/lib/python3.8/dist-packages (from tensorflow) (2.9.0)
Requirement already satisfied: setuptools in /usr/local/lib/python3.8/dist-packages (from tensorflow) (57.4.0)
Requirement already satisfied: keras<2.10.0,>=2.9.0rc0 in /usr/local/lib/python3.8/dist-packages (from tensorflow) (2.9.0)
Requirement already satisfied: grpcio<2.0,>=1.24.3 in /usr/local/lib/python3.8/dist-packages (from tensorflow) (1.51.1)
Requirement already satisfied: gast<0.4.0,>=0.2.1 in /usr/local/lib/python3.8/dist-packages (from tensorflow) (0.4.0)
Requirement already satisfied: numpy>=1.20 in /usr/local/lib/python3.8/dist-packages (from tensorflow) (1.21.6)
Requirement already satisfied: tensorboard<2.10,>=2.9 in /usr/local/lib/python3.8/dist-packages (from tensorflow) (2.9.1)
Requirement already satisfied: wrapt>=1.11.0 in /usr/local/lib/python3.8/dist-packages (from tensorflow) (1.14.1)
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Requirement already satisfied: astunparse>=1.6.0 in /usr/local/lib/python3.8/dist-packages (from tensorflow) (1.6.3)
Requirement already satisfied: flatbuffers<2,>=1.12 in /usr/local/lib/python3.8/dist-packages (from tensorflow) (1.12)
Requirement already satisfied: google-pasta>=0.1.1 in /usr/local/lib/python3.8/dist-packages (from tensorflow) (0.2.0)
Requirement already satisfied: six>=1.12.0 in /usr/local/lib/python3.8/dist-packages (from tensorflow) (1.15.0)
Requirement already satisfied: protobuf<3.20,>=3.9.2 in /usr/local/lib/python3.8/dist-packages (from tensorflow) (3.19.6)
Requirement already satisfied: python-dateutil>=2.7.3 in /usr/local/lib/python3.8/dist-packages (from pandas) (2.8.2)
Requirement already satisfied: pytz>=2017.3 in /usr/local/lib/python3.8/dist-packages (from pandas) (2022.7)
Requirement already satisfied: cycler>=0.10 in /usr/local/lib/python3.8/dist-packages (from matplotlib) (0.11.0)
Requirement already satisfied: pyparsing!=2.0.4,!>=2.1.2,!>=2.1.6,>=2.0.1 in /usr/local/lib/python3.8/dist-packages (from matplotlib) (3.0.9)
Requirement already satisfied: kiwisolver>=1.0.1 in /usr/local/lib/python3.8/dist-packages (from matplotlib) (1.4.4)
Requirement already satisfied: wheel<1.0,>=0.23.0 in /usr/local/lib/python3.8/dist-packages (from astunparse>=1.6.0->tensorflow) (0.38.4)
Requirement already satisfied: markdown>=2.6.8 in /usr/local/lib/python3.8/dist-packages (from tensorboard<2.10,>=2.9->tensorflow) (3.4.1)
Requirement already satisfied: tensorboard-data-server<0.7.0,>=0.6.0 in /usr/local/lib/python3.8/dist-packages (from tensorboard<2.10,>=2.9->tensorflow) (0.6.1)
Requirement already satisfied: requests<3,>=2.21.0 in /usr/local/lib/python3.8/dist-packages (from tensorboard<2.10,>=2.9->tensorflow) (2.25.1)
Requirement already satisfied: werkzeug>=1.0.1 in /usr/local/lib/python3.8/dist-packages (from tensorboard<2.10,>=2.9->tensorflow) (1.0.1)
Requirement already satisfied: google-auth-oauthlib<0.5,>=0.4.1 in /usr/local/lib/python3.8/dist-packages (from tensorboard<2.10,>=2.9->tensorflow) (0.4.6)
Requirement already satisfied: google-auth<3,>=1.6.3 in /usr/local/lib/python3.8/dist-packages (from tensorboard<2.10,>=2.9->tensorflow) (2.15.0)
Requirement already satisfied: tensorboard-plugin-wit>=1.6.0 in /usr/local/lib/python3.8/dist-packages (from tensorboard<2.10,>=2.9->tensorflow) (1.8.1)
Requirement already satisfied: pyasn1-modules>=0.2.1 in /usr/local/lib/python3.8/dist-packages (from google-auth<3,>=1.6.3->tensorboard<2.10,>=2.9->tensorflow) (0.2.8)
Requirement already satisfied: rsa<5,>=3.1.4 in /usr/local/lib/python3.8/dist-packages (from google-auth<3,>=1.6.3->tensorboard<2.10,>=2.9->tensorflow) (4.9)
Requirement already satisfied: cachetools<6.0,>=2.0.0 in /usr/local/lib/python3.8/dist-packages (from google-auth<3,>=1.6.3->tensorboard<2.10,>=2.9->tensorflow) (5.2.0)
Requirement already satisfied: requests-oauthlib>=0.7.0 in /usr/local/lib/python3.8/dist-packages (from google-auth-oauthlib<0.5,>=0.4.1->tensorboard<2.10,>=2.9->tensorflow) (1.3.1)
Requirement already satisfied: importlib-metadata>=4.4 in /usr/local/lib/python3.8/dist-packages (from markdown>=2.6.8->tensorboard<2.10,>=2.9->tensorflow) (6.0.0)
Requirement already satisfied: chardet<5,>=3.0.2 in /usr/local/lib/python3.8/dist-packages (from requests<3,>=2.21.0->tensorboard<2.10,>=2.9->tensorflow) (4.0.0)
Requirement already satisfied: idna<3,>=2.5 in /usr/local/lib/python3.8/dist-packages (from requests<3,>=2.21.0->tensorboard<2.10,>=2.9->tensorflow) (2.10)
Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.8/dist-packages (from requests<3,>=2.21.0->tensorboard<2.10,>=2.9->tensorflow) (2022.12.7)
Requirement already satisfied: urllib3<1.27,>=1.21.1 in /usr/local/lib/python3.8/dist-packages (from requests<3,>=2.21.0->tensorboard<2.10,>=2.9->tensorflow) (1.24.3)
Requirement already satisfied: zipp>=0.5 in /usr/local/lib/python3.8/dist-packages (from importlib-metadata>=4.4->markdown>=2.6.8->tensorboard<2.10,>=2.9->tensorflow) (3.11.0)
Requirement already satisfied: pyasn1<0.5.0,>=0.4.6 in /usr/local/lib/python3.8/dist-packages (from pyasn1-modules>=0.2.1->google-auth<3,>=1.6.3->tensorboard<2.10,>=2.9->tensorflow) (0.4.8)
Requirement already satisfied: oauthlib>=3.0.0 in /usr/local/lib/python3.8/dist-packages (from requests-oauthlib>=0.7.0->google-auth-oauthlib<0.5,>=0.4.1->tensorboard<2.10,>=2.9->tensorflow) (3.2
```

```
import os
import pandas as pd
import tensorflow as tf
import numpy as np
```

```
df = pd.read_csv(os.path.join('/content/sample_data/Toxic-comment-class/train.csv'), low_memory=False)
df.dropna(how='all')
```

	id	comment_text	toxic	severe_toxic	obscene	threat	i
0	28cffd1d2ba52a18	If I were to take the ill-advised action you a...	0	0	0	0	
1	28d0251654b4925d	Thats cos Im a schizophrenic TOAT. But ure ju...	1	0	0	0	
2	28d346cc8be778ed	Admin Please note this edit https://en.wikiped...	0	0	0	0	
3	28d452e1bc5a252e	is \n\nDare I say Gogo Dodo is a wikihound?	0	0	0	0	
4	28d507b975ff2fef	June 2014 (UTC)\n\nThanks. If you want to crea...	0	0	0	0	
...
15472	28da49d589de1153	Sock Puppet\nDefend yourself, why don't ya? ht...	0	0	0	0	
15473	28da8a3204519328	Richard Stallman's Johnson \n\nWhat is your ob...	0	0	0	0	
		One Railway					

```
df.head()
```

If I were to take the

- ▼ Data Preprocessing

```
!pip list
```

```

xgboost      0.90
xkit          0.0.0
xlrd          1.2.0
xlwt          1.3.0
yarl          1.8.2
yellowbrick  1.5
zict          2.2.0
zipp          3.11.0

```

```
from tensorflow.keras.layers import TextVectorization
```

```

X = df['comment_text']
y = df[df.columns[2:]].values

```

```
MAX_FEATURES = 150000 # number of words in the vocab
```

```

vectorizer = TextVectorization(max_tokens=MAX_FEATURES,
                               output_sequence_length=1800,
                               output_mode='int')

```

```
vectorizer.adapt(X.values)
```

```
vectorized_text = vectorizer(X.values)
```

```

#MCSHBAP - map, cache, shuffle, batch, prefetch from_tensor_slices, list_file
dataset = tf.data.Dataset.from_tensor_slices((vectorized_text, y))
dataset = dataset.cache()
dataset = dataset.shuffle(10000)
dataset = dataset.batch(16)
dataset = dataset.prefetch(8) # helps bottlenecks

```

```

train = dataset.take(int(len(dataset)*.7))
val = dataset.skip(int(len(dataset)*.7)).take(int(len(dataset)*.2))
test = dataset.skip(int(len(dataset)*.9)).take(int(len(dataset)*.1))

```

▼ Create Sequential Model(LSTM,LSTM-CNN)

```

from tensorflow.keras.models import Sequential
from tensorflow.keras.layers import LSTM, Dropout, Bidirectional, Dense, Embedding

```

```

model = Sequential()
# Create the embedding layer
model.add(Embedding(MAX_FEATURES+1, 32))
# Bidirectional LSTM Layer
model.add(Bidirectional(LSTM(32, activation='tanh'))))
# Feature extractor Fully connected layers
model.add(Dense(128, activation='relu'))
model.add(Dense(256, activation='relu'))

```

```
model.add(Dense(128, activation='relu'))
# Final layer
model.add(Dense(6, activation='sigmoid'))
```

```
model.compile(loss='BinaryCrossentropy', optimizer='Adam')
```

```
model.summary()
```

Model: "sequential_2"

Layer (type)	Output Shape	Param #
embedding_2 (Embedding)	(None, None, 32)	4800032
bidirectional_2 (Bidirectional)	(None, 64)	16640
dense_8 (Dense)	(None, 128)	8320
dense_9 (Dense)	(None, 256)	33024
dense_10 (Dense)	(None, 128)	32896
dense_11 (Dense)	(None, 6)	774

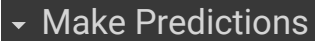
=====
 Total params: 4,891,686
 Trainable params: 4,891,686
 Non-trainable params: 0

```
history = model.fit(train, epochs=5, validation_data=val)
```

```
Epoch 1/5
677/677 [=====] - 892s 1s/step - loss: 0.1127 - val_loss: 0.0681
Epoch 2/5
677/677 [=====] - 887s 1s/step - loss: 0.0612 - val_loss: 0.0522
Epoch 3/5
677/677 [=====] - 885s 1s/step - loss: 0.0484 - val_loss: 0.0411
Epoch 4/5
677/677 [=====] - 887s 1s/step - loss: 0.0397 - val_loss: 0.0349
Epoch 5/5
677/677 [=====] - 886s 1s/step - loss: 0.0358 - val_loss: 0.0291
```

```
from matplotlib import pyplot as plt
```

```
plt.figure(figsize=(8,5))
pd.DataFrame(history.history).plot()
plt.show()
```

[illegible]

```
[0, 0, 0, 0, 0, 0],  
[0, 0, 0, 0, 0, 0]])
```

```
res.shape
```

```
(1, 6)
```

▼ Evaluate Model

```
from tensorflow.keras.metrics import Precision, Recall, CategoricalAccuracy
```

```
pre = Precision()  
re = Recall()  
acc = CategoricalAccuracy()
```

```
for batch in test.as_numpy_iterator():  
    # Unpack the batch  
    X_true, y_true = batch  
    # Make a prediction  
    yhat = model.predict(X_true)  
  
    # Flatten the predictions  
    y_true = y_true.flatten()  
    yhat = yhat.flatten()  
  
    pre.update_state(y_true, yhat)  
    re.update_state(y_true, yhat)  
    acc.update_state(y_true, yhat)
```

```

1/1 [=====] - 0s 170ms/step
1/1 [=====] - 0s 170ms/step
1/1 [=====] - 0s 182ms/step
1/1 [=====] - 0s 168ms/step
1/1 [=====] - 0s 175ms/step
1/1 [=====] - 0s 164ms/step
1/1 [=====] - 0s 169ms/step
1/1 [=====] - 0s 178ms/step
1/1 [=====] - 0s 181ms/step
1/1 [=====] - 0s 164ms/step
1/1 [=====] - 0s 165ms/step
1/1 [=====] - 0s 168ms/step
1/1 [=====] - 0s 177ms/step
1/1 [=====] - 0s 169ms/step
1/1 [=====] - 0s 168ms/step
1/1 [=====] - 0s 172ms/step
1/1 [=====] - 0s 166ms/step
1/1 [=====] - 0s 172ms/step
1/1 [=====] - 0s 170ms/step
1/1 [=====] - 0s 172ms/step
1/1 [=====] - 0s 189ms/step
1/1 [=====] - 0s 189ms/step
1/1 [=====] - 0s 169ms/step
1/1 [=====] - 0s 170ms/step
1/1 [=====] - 0s 166ms/step
1/1 [=====] - 0s 173ms/step
1/1 [=====] - 0s 176ms/step
1/1 [=====] - 0s 174ms/step
1/1 [=====] - 0s 165ms/step
1/1 [=====] - 0s 176ms/step
1/1 [=====] - 0s 164ms/step
1/1 [=====] - 0s 167ms/step
1/1 [=====] - 0s 175ms/step
1/1 [=====] - 0s 165ms/step

```

```
print(f'Precision: {pre.result().numpy()}, Recall:{re.result().numpy()}, Accuracy:{acc.result().numpy()}')
```

```
Precision: 0.8465909361839294, Recall:0.8418079018592834, Accuracy:0.5104166865348816
```

Calculating Model Accuracy using Test-set



Test and Gradio

```
!pip install gradio jinja2
```

```

Requirement already satisfied: gradio in /usr/local/lib/python3.8/dist-packages (3.16.1)
Requirement already satisfied: jinja2 in /usr/local/lib/python3.8/dist-packages (2.11.3)
Requirement already satisfied: uvicorn in /usr/local/lib/python3.8/dist-packages (from gradio) (0.20.0)
Requirement already satisfied: requests in /usr/local/lib/python3.8/dist-packages (from gradio) (2.25.1)
Requirement already satisfied: fastapi in /usr/local/lib/python3.8/dist-packages (from gradio) (0.89.1)
Requirement already satisfied: aiohttp in /usr/local/lib/python3.8/dist-packages (from gradio) (3.8.3)
Requirement already satisfied: pillow in /usr/local/lib/python3.8/dist-packages (from gradio) (7.1.2)

```



```

Requirement already satisfied: rspec in /usr/local/lib/python3.8/dist-packages (from gradio) (2022.11.0)
Requirement already satisfied: matplotlib in /usr/local/lib/python3.8/dist-packages (from gradio) (3.2.2)
Requirement already satisfied: numpy in /usr/local/lib/python3.8/dist-packages (from gradio) (1.21.6)
Requirement already satisfied: pyyaml in /usr/local/lib/python3.8/dist-packages (from gradio) (6.0)
Requirement already satisfied: ffmpeg in /usr/local/lib/python3.8/dist-packages (from gradio) (0.3.0)
Requirement already satisfied: pandas in /usr/local/lib/python3.8/dist-packages (from gradio) (1.3.5)
Requirement already satisfied: websockets>=10.0 in /usr/local/lib/python3.8/dist-packages (from gradio) (10.4)
Requirement already satisfied: orjson in /usr/local/lib/python3.8/dist-packages (from gradio) (3.8.5)
Requirement already satisfied: pycryptodome in /usr/local/lib/python3.8/dist-packages (from gradio) (3.16.0)
Requirement already satisfied: pydub in /usr/local/lib/python3.8/dist-packages (from gradio) (0.25.1)
Requirement already satisfied: pydantic in /usr/local/lib/python3.8/dist-packages (from gradio) (1.10.4)
Requirement already satisfied: markdown-it-py[linkify,plugins] in /usr/local/lib/python3.8/dist-packages (from gradio) (2.1.0)
Requirement already satisfied: typing-extensions in /usr/local/lib/python3.8/dist-packages (from gradio) (4.4.0)
Requirement already satisfied: python-multipart in /usr/local/lib/python3.8/dist-packages (from gradio) (0.0.5)
Requirement already satisfied: altair>=4.2.0 in /usr/local/lib/python3.8/dist-packages (from gradio) (4.2.0)
Requirement already satisfied: markupsafe in /usr/local/lib/python3.8/dist-packages (from gradio) (2.0.1)
Requirement already satisfied: toolz in /usr/local/lib/python3.8/dist-packages (from altair>=4.2.0->gradio) (0.12.0)
Requirement already satisfied: jsonschema>=3.0 in /usr/local/lib/python3.8/dist-packages (from altair>=4.2.0->gradio) (4.3.3)
Requirement already satisfied: entrypoints in /usr/local/lib/python3.8/dist-packages (from altair>=4.2.0->gradio) (0.4)
Requirement already satisfied: pytz>=2017.3 in /usr/local/lib/python3.8/dist-packages (from pandas->gradio) (2022.7)
Requirement already satisfied: python-dateutil>=2.7.3 in /usr/local/lib/python3.8/dist-packages (from pandas->gradio) (2.8.2)
Requirement already satisfied: multidict<7.0,>=4.5 in /usr/local/lib/python3.8/dist-packages (from aiohttp->gradio) (6.0.4)
Requirement already satisfied: yarl<2.0,>=1.0 in /usr/local/lib/python3.8/dist-packages (from aiohttp->gradio) (1.8.2)
Requirement already satisfied: attrs>=17.3.0 in /usr/local/lib/python3.8/dist-packages (from aiohttp->gradio) (22.2.0)
Requirement already satisfied: charset-normalizer<3.0,>=2.0 in /usr/local/lib/python3.8/dist-packages (from aiohttp->gradio) (2.1.1)
Requirement already satisfied: aiosignal>=1.1.2 in /usr/local/lib/python3.8/dist-packages (from aiohttp->gradio) (1.3.1)
Requirement already satisfied: frozenlist>=1.1.1 in /usr/local/lib/python3.8/dist-packages (from aiohttp->gradio) (1.3.3)
Requirement already satisfied: async-timeout<5.0,>=4.0.0a3 in /usr/local/lib/python3.8/dist-packages (from aiohttp->gradio) (4.0.2)
Requirement already satisfied: starlette==0.22.0 in /usr/local/lib/python3.8/dist-packages (from fastapi->gradio) (0.22.0)
Requirement already satisfied: anyio<5,>=3.4.0 in /usr/local/lib/python3.8/dist-packages (from starlette==0.22.0->fastapi->gradio) (3.6.2)
Requirement already satisfied: httpcore<0.17.0,>=0.15.0 in /usr/local/lib/python3.8/dist-packages (from httpx->gradio) (0.16.3)
Requirement already satisfied: certifi in /usr/local/lib/python3.8/dist-packages (from httpx->gradio) (2022.12.7)
Requirement already satisfied: rfc3986[idna2008]<2,>=1.3 in /usr/local/lib/python3.8/dist-packages (from httpx->gradio) (1.5.0)
Requirement already satisfied: sniffio in /usr/local/lib/python3.8/dist-packages (from httpx->gradio) (1.3.0)
Requirement already satisfied: mdurl~=0.1 in /usr/local/lib/python3.8/dist-packages (from markdown-it-py[linkify,plugins]->gradio) (0.1.2)
Requirement already satisfied: linkify-it-py~=1.0 in /usr/local/lib/python3.8/dist-packages (from markdown-it-py[linkify,plugins]->gradio) (1.0.3)
Requirement already satisfied: mdit-py-plugins in /usr/local/lib/python3.8/dist-packages (from markdown-it-py[linkify,plugins]->gradio) (0.3.3)
Requirement already satisfied: kiwisolver>=1.0.1 in /usr/local/lib/python3.8/dist-packages (from matplotlib->gradio) (1.4.4)
Requirement already satisfied: cycycler>=0.10 in /usr/local/lib/python3.8/dist-packages (from matplotlib->gradio) (0.11.0)
Requirement already satisfied: pyparsing!=2.0.4,!2.1.2,!2.1.6,>=2.0.1 in /usr/local/lib/python3.8/dist-packages (from matplotlib->gradio) (3.0.9)
Requirement already satisfied: six>=1.4.0 in /usr/local/lib/python3.8/dist-packages (from python-multipart->gradio) (1.15.0)
Requirement already satisfied: urllib3<1.27,>=1.21.1 in /usr/local/lib/python3.8/dist-packages (from requests->gradio) (1.24.3)
Requirement already satisfied: chardet<5,>=3.0.2 in /usr/local/lib/python3.8/dist-packages (from requests->gradio) (4.0.0)
Requirement already satisfied: idna<3,>=2.5 in /usr/local/lib/python3.8/dist-packages (from requests->gradio) (2.10)
Requirement already satisfied: h11>=0.8 in /usr/local/lib/python3.8/dist-packages (from uvicorn->gradio) (0.14.0)
Requirement already satisfied: click>=7.0 in /usr/local/lib/python3.8/dist-packages (from uvicorn->gradio) (7.1.2)
Requirement already satisfied: pyparsing!=0.17.0,!0.17.1,!0.17.2,>=0.14.0 in /usr/local/lib/python3.8/dist-packages (from jsonschema>=3.0->altair>=4.2.0->gradio) (0.19.3)
Requirement already satisfied: importlib-resources>=1.4.0 in /usr/local/lib/python3.8/dist-packages (from jsonschema>=3.0->altair>=4.2.0->gradio) (5.10.2)
Requirement already satisfied: uc-micro-py in /usr/local/lib/python3.8/dist-packages (from linkify-it-py~=1.0->markdown-it-py[linkify,plugins]->gradio) (1.0.1)
Requirement already satisfied: zinn>=3.1.0 in /usr/local/lib/python3.8/dist-packages (from importlib-resources>=1.4.0->jsonschema>=3.0->altair>=4.2.0->gradio) (3.11.0)

```

```
pip install typing_extensions
```

```

Looking in indexes: https://pypi.org/simple, https://us-python.pkg.dev/colab-wheels/public/simple/
Requirement already satisfied: typing_extensions in /usr/local/lib/python3.8/dist-packages (4.4.0)

```

```
pip install dataclasses
```

```

Looking in indexes: https://pypi.org/simple, https://us-python.pkg.dev/colab-wheels/public/simple/
Requirement already satisfied: dataclasses in /usr/local/lib/python3.8/dist-packages (0.6)

```

```
import tensorflow as tf
from dataclasses import dataclass
import gradio as gr
from typing_extensions import dataclass_transform
```

```
model.save('toxicity.h5')
```

```
model = tf.keras.models.load_model('toxicity.h5')
```

```
input_str = vectorizer('hey i freaken hate you!')
```

```
res = model.predict(np.expand_dims(input_str,0))
```

```
1/1 [=====] - 2s 2s/step
```

```
res
```

```
array([[0.641197 , 0.00343184, 0.08543073, 0.01677373, 0.16362278,
        0.0340514 ]], dtype=float32)
```

```
def score_comment(comment):
    vectorized_comment = vectorizer([comment])
    results = model.predict(vectorized_comment)

    text = ''
    for idx, col in enumerate(df.columns[2:]):
        text += '{}: {}'.format(col, results[0][idx]>0.5)

    return text
```

```
interface = gr.Interface(fn=score_comment,
                        inputs=gr.inputs.Textbox(lines=2, placeholder='Comment to score'),
                        outputs='text')
```

```
al/lib/python3.8/dist-packages/gradio/inputs.py:27: UserWarning: Usage of gradio.inputs is deprecated, and will not be supported in the future, please import your component from gradio.components
gs.warn(
al/lib/python3.8/dist-packages/gradio/deprecation.py:40: UserWarning: `optional` parameter is deprecated, and it has no effect
gs.warn(value)
al/lib/python3.8/dist-packages/gradio/deprecation.py:40: UserWarning: `numeric` parameter is deprecated, and it has no effect
gs.warn(value)
```

```
interface.launch(share=True)
```

Colab notebook detected. To show errors in colab notebook, set debug=True in launc
Running on public URL: <https://e2316913-9dad-4c78.gradio.live>

This share link expires in 72 hours. For free permanent hosting and GPU upgrades (

comment

freaking shit

ClearSubmit

output

toxic: True
severe_toxic: False
obscene: True
threat: False
insult: True
identity_toxic: False

Flag

✓ 4s completed at 12:29 AM

