

CSE4095 - Group 8

Delivery 4 Presentation

150117010 SÜLEYMAN AHMET SÖNMEZ

150117036 MUHAMMED ENES AKTÜRK

150117064 YUNUS EMRE ERTUNÇ

150117004 GÜNEŞ YÜZAK

150117048 FATİH BAŞ

Fasttext Embeddings + BiLSTM

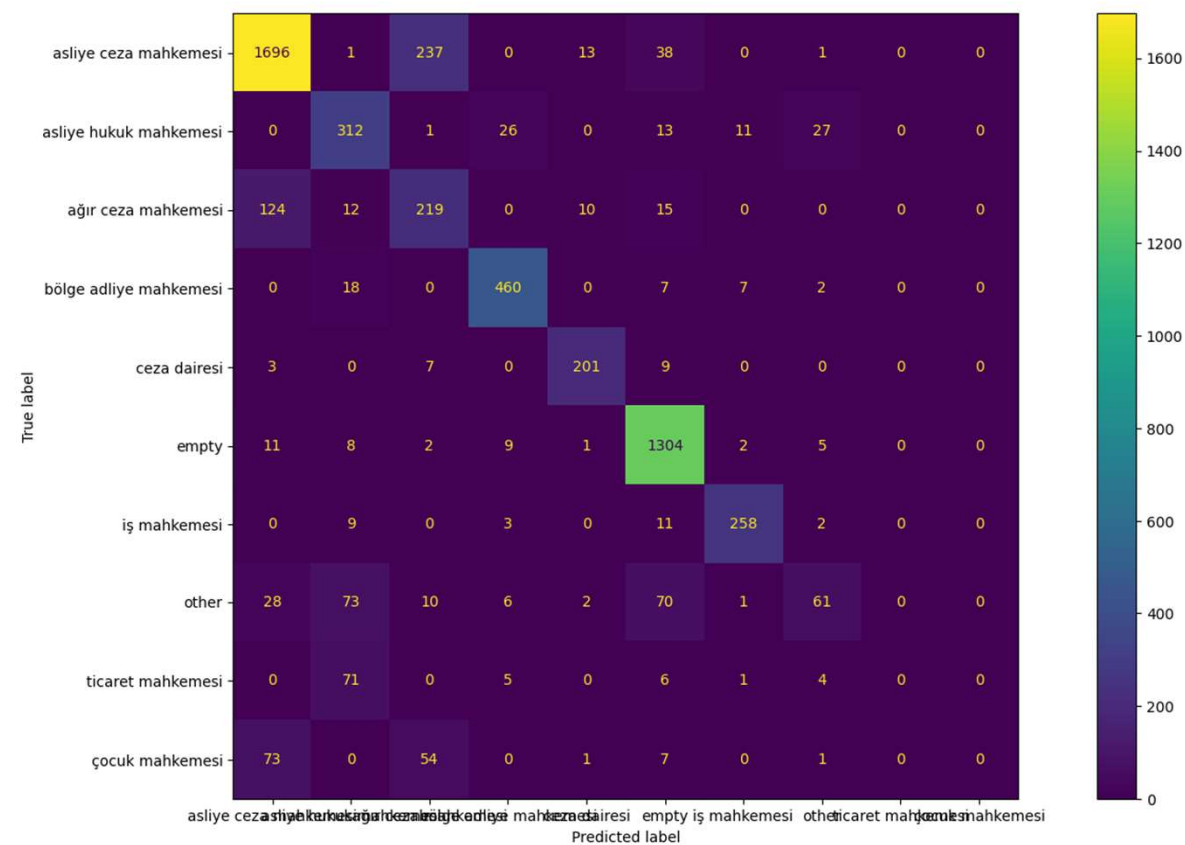
```
Model: "model"
-----
Layer (type)                Output Shape              Param #
-----
input_1 (InputLayer)        [(None, None)]           0
embedding (Embedding)       (None, None, 300)        28991700
bidirectional (Bidirectiona (None, None, 128)        186880
l)
bidirectional_1 (Bidirectio (None, 128)              98816
nal)
dense (Dense)               (None, 16)               2064
=====
Total params: 29,279,460
Trainable params: 287,760
Non-trainable params: 28,991,700
-----
```

```
def create_model(self):
    # Input for variable-length sequences of integers
    self.inputs = keras.Input(shape=(None,), dtype="int32")
    # Embed each integer in a 128-dimensional vector
    self.model = layers.Embedding(self.nb_words+1, EMBED_DIM_FASTTEXT, weights=[self.fasttext_embedding_matrix], input_length=MAX_SEQ_LEN, trainable=False)
    # Add 2 bidirectional LSTMs
    self.model = layers.Bidirectional(layers.LSTM(64, return_sequences=True))(self.model)
    self.model = layers.Bidirectional(layers.LSTM(64))(self.model)
    # Add a classifier
    self.outputs = layers.Dense(self.num_classes, activation="sigmoid")(self.model)
    self.model = keras.Model(self.inputs, self.outputs)
    self.model.summary()
```

Classification Results

	precision	recall	f1-score	support
asliye ceza mahkemesi	0.88	0.85	0.87	1986
asliye hukuk mahkemesi	0.62	0.80	0.70	390
ağır ceza mahkemesi	0.41	0.58	0.48	380
bölge adliye mahkemesi	0.90	0.93	0.92	494
ceza dairesi	0.88	0.91	0.90	220
empty	0.88	0.97	0.92	1342
iş mahkemesi	0.92	0.91	0.92	283
other	0.59	0.24	0.34	251
ticaret mahkemesi	0.00	0.00	0.00	87
çocuk mahkemesi	0.00	0.00	0.00	136
accuracy			0.81	5569
macro avg	0.61	0.62	0.60	5569
weighted avg	0.78	0.81	0.79	5569
Process finished with exit code 0				

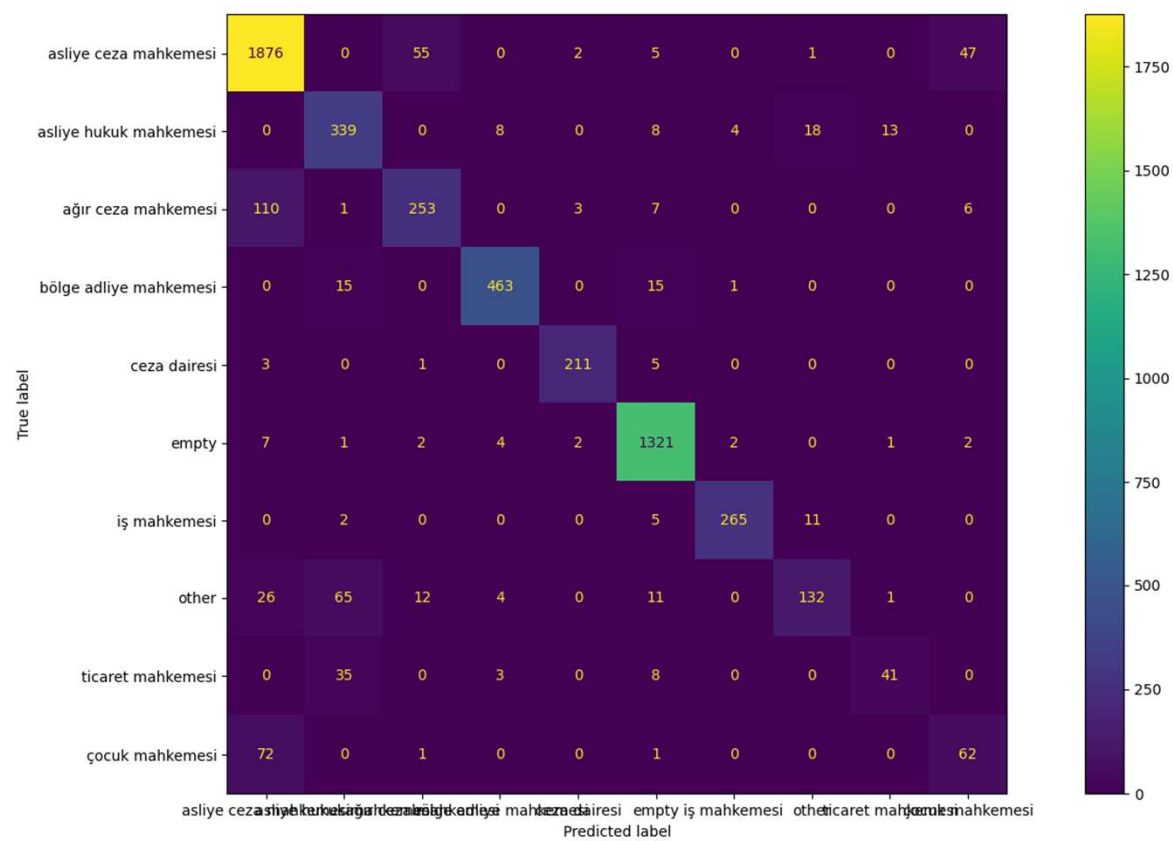
Classification Results



FastText Classification Results

	precision	recall	f1-score	support
asliye ceza mahkemesi	0.90	0.94	0.92	1986
asliye hukuk mahkemesi	0.74	0.87	0.80	390
ağır ceza mahkemesi	0.78	0.67	0.72	380
bölge adliye mahkemesi	0.96	0.94	0.95	494
ceza dairesi	0.97	0.96	0.96	220
empty	0.95	0.98	0.97	1342
iş mahkemesi	0.97	0.94	0.95	283
other	0.81	0.53	0.64	251
ticaret mahkemesi	0.73	0.47	0.57	87
çocuk mahkemesi	0.53	0.46	0.49	136
accuracy			0.89	5569
macro avg	0.83	0.77	0.80	5569
weighted avg	0.89	0.89	0.89	5569

Classification Results

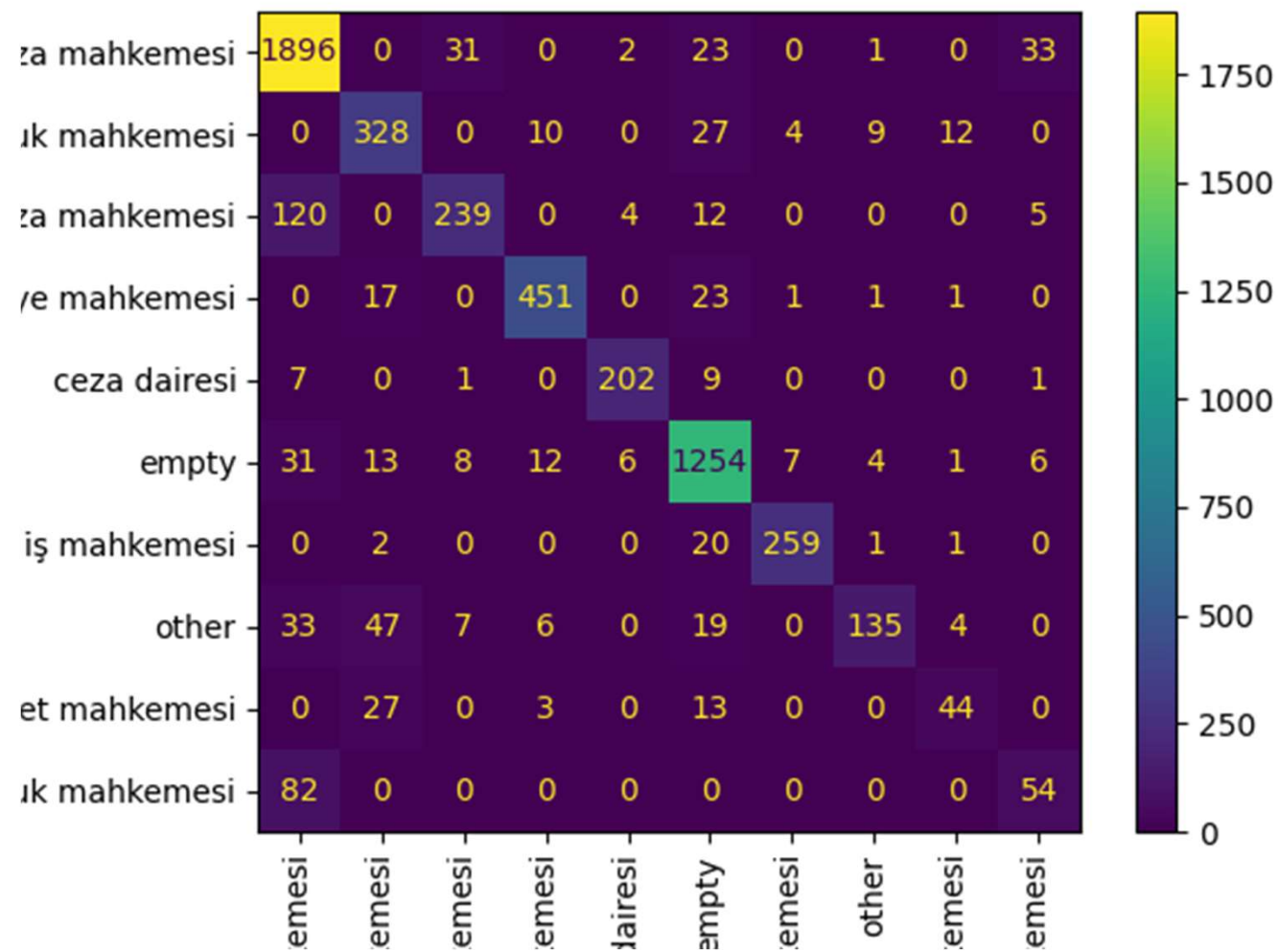


MNB Classification Results

	precision	recall	f1-score	support
asliye ceza mahkemesi	0.68	0.99	0.81	1986
asliye hukuk mahkemesi	0.86	0.33	0.48	390
ağır ceza mahkemesi	0.00	0.00	0.00	380
bölge adliye mahkemesi	0.87	0.72	0.79	494
ceza dairesi	0.00	0.00	0.00	220
empty	0.52	0.78	0.62	1342
iş mahkemesi	0.99	0.28	0.44	283
other	0.00	0.00	0.00	251
ticaret mahkemesi	0.00	0.00	0.00	87
çocuk mahkemesi	0.00	0.00	0.00	136
accuracy			0.64	5569
macro avg	0.39	0.31	0.31	5569
weighted avg	0.56	0.64	0.56	5569

LR Classification Results

	precision	recall	f1-score	support
asliye ceza mahkemesi	0.87	0.95	0.91	1986
asliye hukuk mahkemesi	0.76	0.84	0.80	390
ağır ceza mahkemesi	0.84	0.63	0.72	380
bölge adliye mahkemesi	0.94	0.91	0.92	494
ceza dairesi	0.94	0.92	0.93	220
empty	0.90	0.93	0.91	1342
iş mahkemesi	0.96	0.92	0.94	283
other	0.89	0.54	0.67	251
ticaret mahkemesi	0.70	0.51	0.59	87
çocuk mahkemesi	0.55	0.40	0.46	136
accuracy			0.87	5569
macro avg	0.83	0.75	0.78	5569
weighted avg	0.87	0.87	0.87	5569



SVM Classification Results

	precision	recall	f1-score	support
asliye ceza mahkemesi	0.90	0.96	0.93	1986
asliye hukuk mahkemesi	0.79	0.82	0.80	390
ağır ceza mahkemesi	0.84	0.69	0.76	380
bölge adliye mahkemesi	0.93	0.92	0.93	494
ceza dairesi	0.96	0.95	0.96	220
empty	0.92	0.94	0.93	1342
iş mahkemesi	0.95	0.95	0.95	283
other	0.82	0.60	0.69	251
ticaret mahkemesi	0.72	0.63	0.67	87
çocuk mahkemesi	0.58	0.46	0.51	136
accuracy			0.89	5569
macro avg	0.84	0.79	0.81	5569
weighted avg	0.89	0.89	0.89	5569

