
Delivery 4 - Text Classification (Court)

CSE4095 - Special Topics in Comp. Eng. III

— Ali Reza Ibrahimzada
Muhammed Fatih Öztel
Basil Osama Hamid Elkhalfi

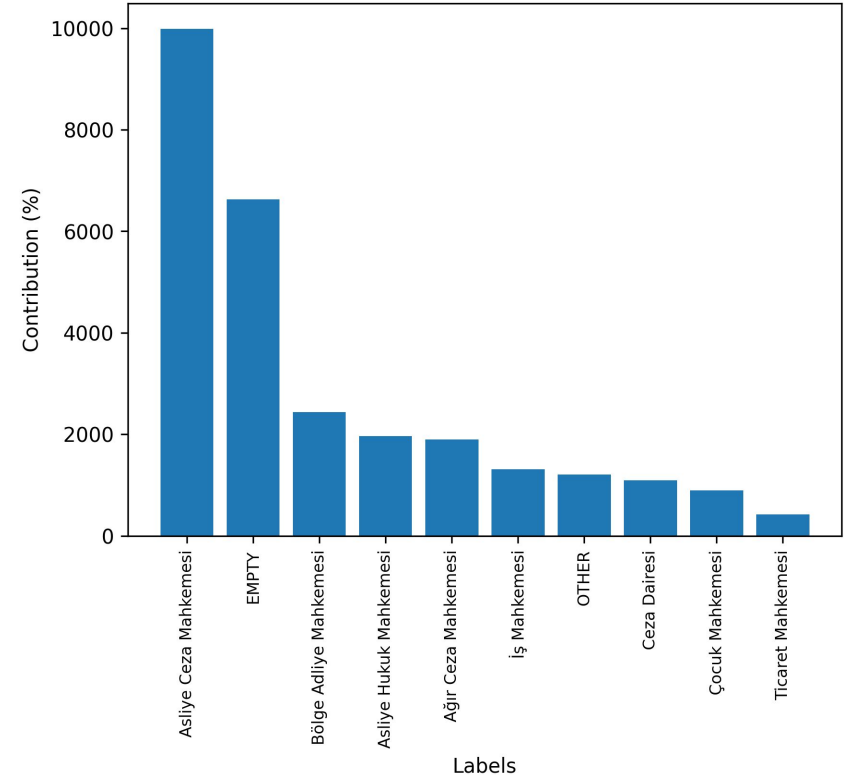
Huzeyfe Ayaz
Yunus Ahmed Stahlschmidt
Sameeh Kunbargi

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- Data Cleaning and Preprocessing
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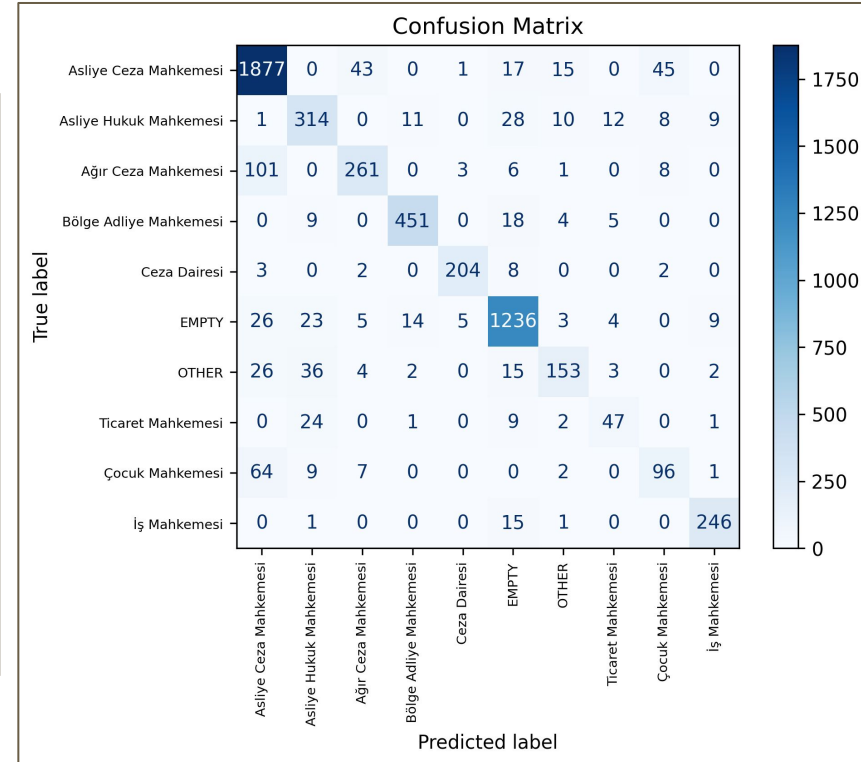
Data Cleaning and Preprocessing

- Cleaned Data from Delivery 1
- Class Labels as per Professor's instructions
- Training (80%) and Test (20%) in Stratified Manner



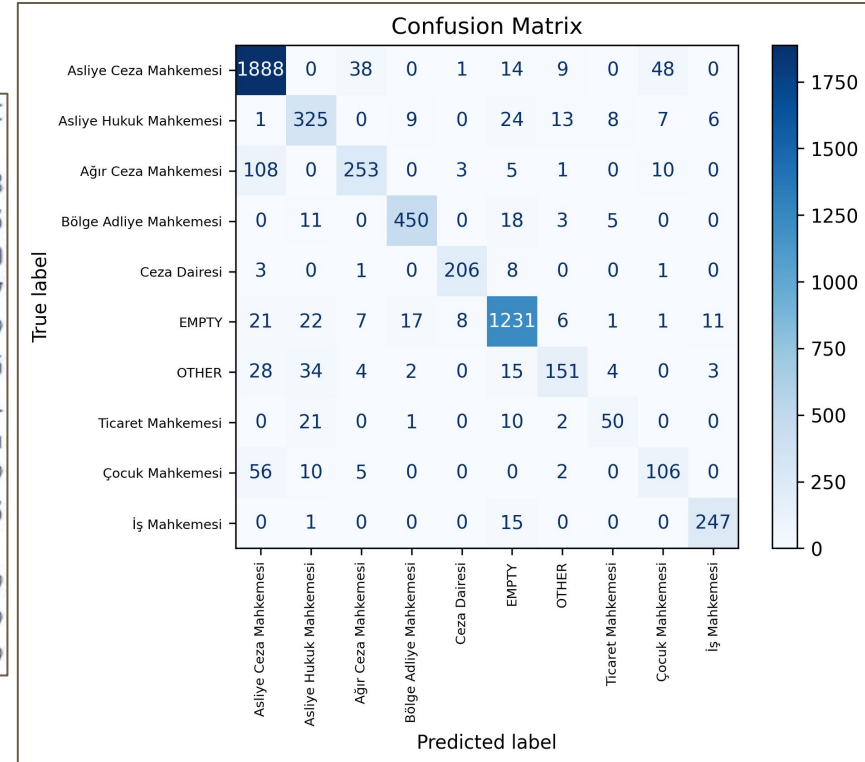
Logistic Regression

	precision	recall	f1-score	support
Asliye Ceza Mahkemesi	0.89	0.94	0.92	1998
Asliye Hukuk Mahkemesi	0.75	0.80	0.78	393
Ağır Ceza Mahkemesi	0.81	0.69	0.74	380
Bölge Adliye Mahkemesi	0.94	0.93	0.93	487
Ceza Dairesi	0.96	0.93	0.94	219
EMPTY	0.91	0.93	0.92	1325
OTHER	0.80	0.63	0.71	241
Ticaret Mahkemesi	0.66	0.56	0.61	84
Çocuk Mahkemesi	0.60	0.54	0.57	179
İş Mahkemesi	0.92	0.94	0.93	263
accuracy			0.88	5569
macro avg	0.83	0.79	0.80	5569
weighted avg	0.87	0.88	0.87	5569



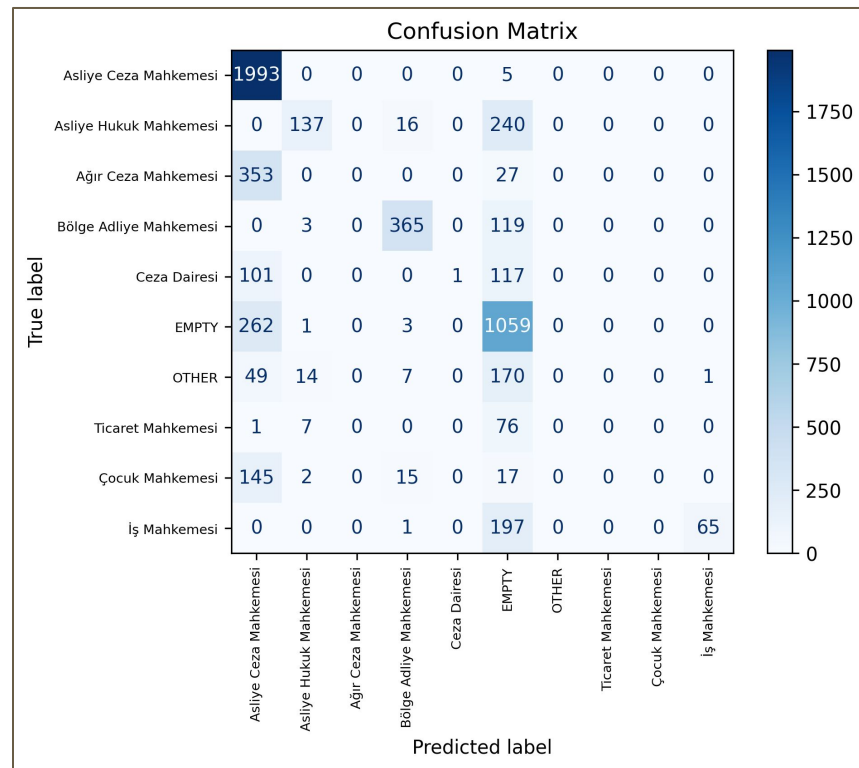
Linear Support Vector Classifier

	precision	recall	f1-score	support
Asliye Ceza Mahkemesi	0.90	0.94	0.92	1998
Asliye Hukuk Mahkemesi	0.77	0.83	0.80	393
Ağır Ceza Mahkemesi	0.82	0.67	0.74	380
Bölge Adliye Mahkemesi	0.94	0.92	0.93	487
Ceza Dairesi	0.94	0.94	0.94	219
EMPTY	0.92	0.93	0.92	1325
OTHER	0.81	0.63	0.71	241
Ticaret Mahkemesi	0.74	0.60	0.66	84
Çocuk Mahkemesi	0.61	0.59	0.60	179
İş Mahkemesi	0.93	0.94	0.93	263
accuracy			0.88	5569
macro avg	0.84	0.80	0.81	5569
weighted avg	0.88	0.88	0.88	5569



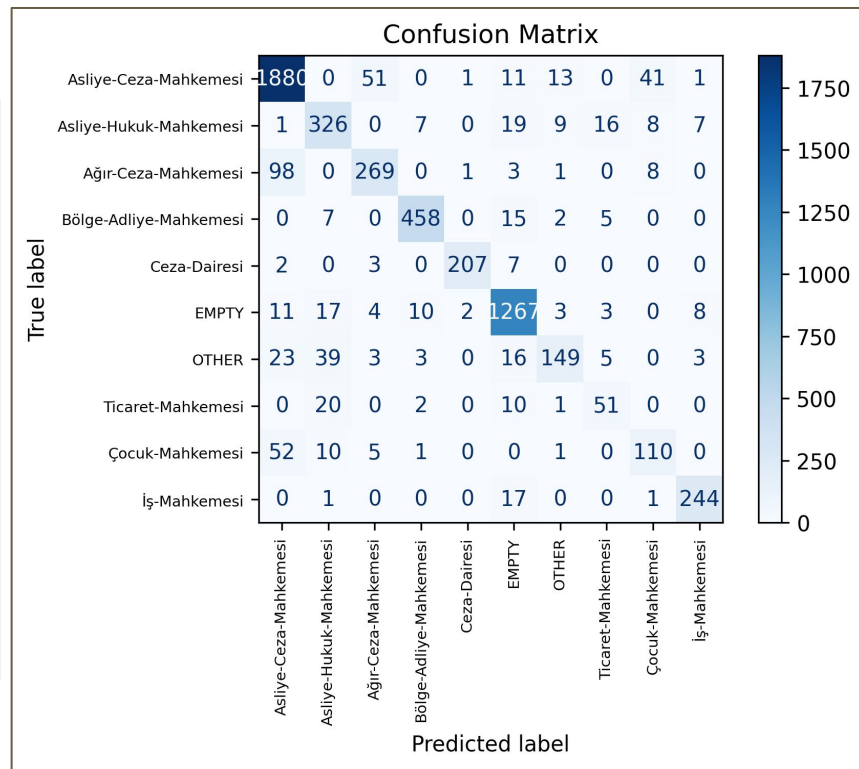
Multinomial Naive Bayes

	precision	recall	f1-score	support
Asliye Ceza Mahkemesi	0.69	1.00	0.81	1998
Asliye Hukuk Mahkemesi	0.84	0.35	0.49	393
Ağır Ceza Mahkemesi	0.00	0.00	0.00	380
Bölge Adliye Mahkemesi	0.90	0.75	0.82	487
Ceza Dairesi	1.00	0.00	0.01	219
EMPTY	0.52	0.80	0.63	1325
OTHER	0.00	0.00	0.00	241
Ticaret Mahkemesi	0.00	0.00	0.00	84
Çocuk Mahkemesi	0.00	0.00	0.00	179
İş Mahkemesi	0.98	0.25	0.40	263
accuracy			0.65	5569
macro avg	0.49	0.31	0.32	5569
weighted avg	0.59	0.65	0.57	5569



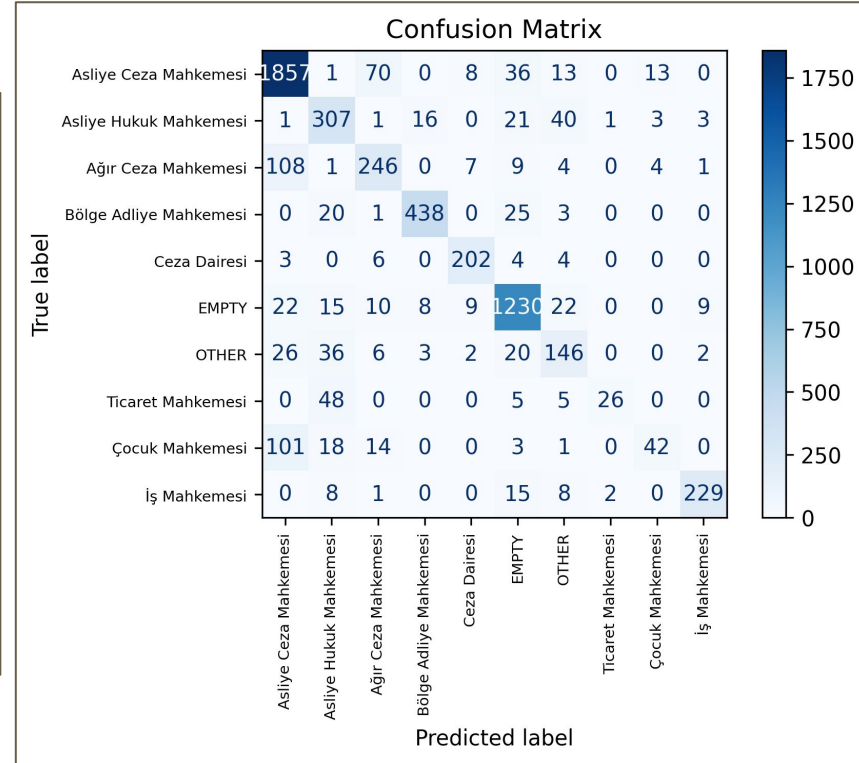
FastText

	precision	recall	f1-score	support
Asliye-Ceza-Mahkemesi	0.91	0.94	0.92	1998
Asliye-Hukuk-Mahkemesi	0.78	0.83	0.80	393
Ağır-Ceza-Mahkemesi	0.80	0.71	0.75	380
Bölge-Adliye-Mahkemesi	0.95	0.94	0.95	487
Ceza-Dairesi	0.98	0.95	0.96	219
EMPTY	0.93	0.96	0.94	1325
OTHER	0.83	0.62	0.71	241
Ticaret-Mahkemesi	0.64	0.61	0.62	84
Çocuk-Mahkemesi	0.65	0.61	0.63	179
İş-Mahkemesi	0.93	0.93	0.93	263
accuracy			0.89	5569
macro avg	0.84	0.81	0.82	5569
weighted avg	0.89	0.89	0.89	5569



LSTM

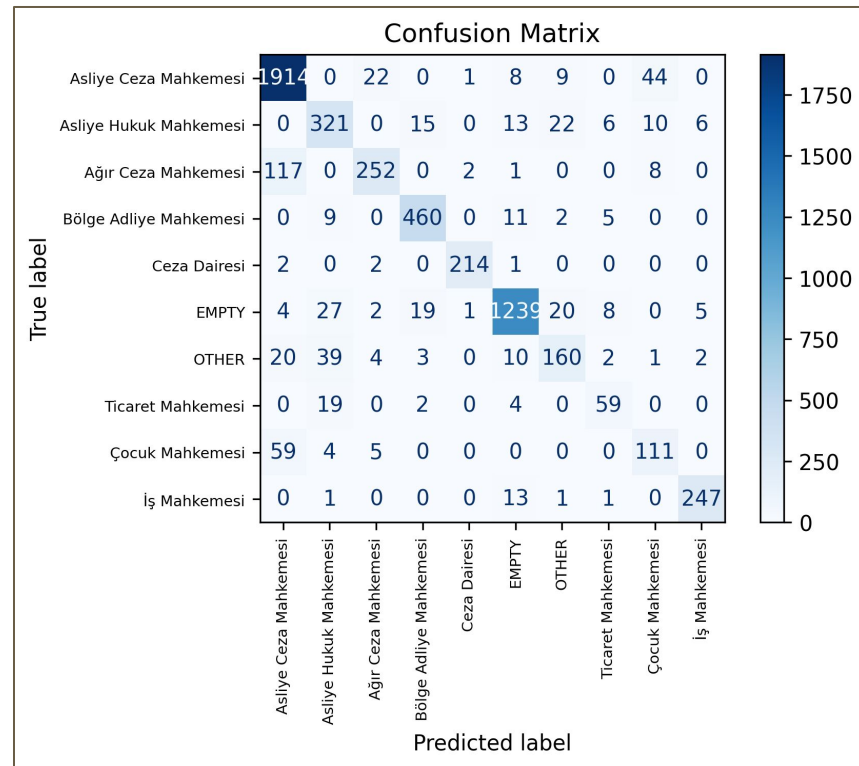
	precision	recall	f1-score	support
Asliye Ceza Mahkemesi	0.88	0.93	0.90	1998
Asliye Hukuk Mahkemesi	0.68	0.78	0.72	393
Ağır Ceza Mahkemesi	0.69	0.65	0.67	380
Bölge Adliye Mahkemesi	0.94	0.90	0.92	487
Ceza Dairesi	0.89	0.92	0.90	219
EMPTY	0.90	0.93	0.91	1325
OTHER	0.59	0.61	0.60	241
Ticaret Mahkemesi	0.90	0.31	0.46	84
Çocuk Mahkemesi	0.68	0.23	0.35	179
İş Mahkemesi	0.94	0.87	0.90	263
accuracy			0.85	5569
macro avg	0.81	0.71	0.73	5569
weighted avg	0.85	0.85	0.84	5569



Transformer

savasy/bert-base-turkish-sentiment-cased from 😊 - 10 epoch

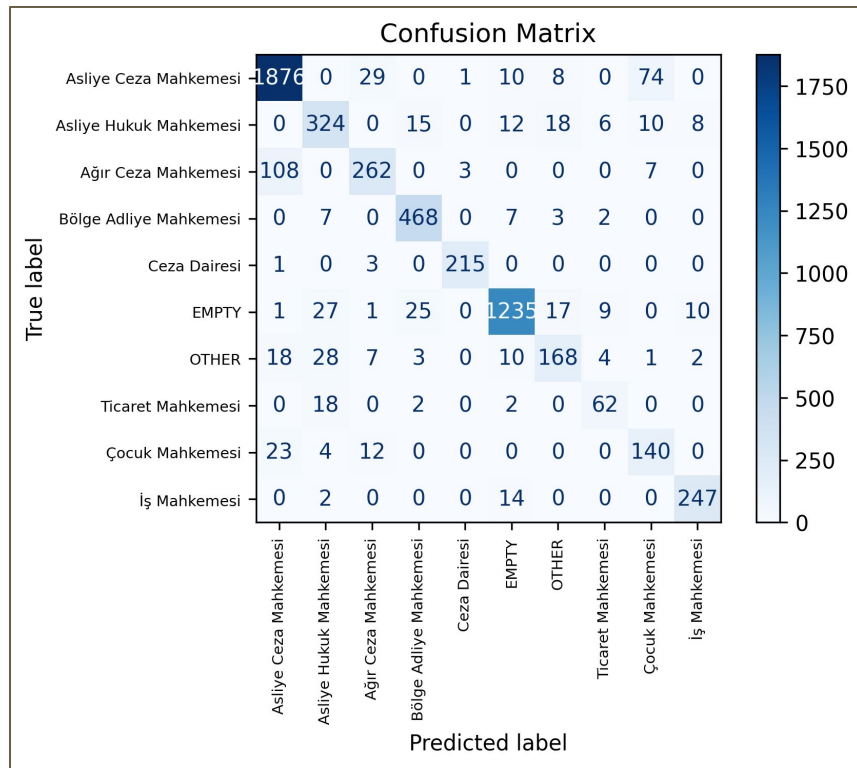
	precision	recall	f1-score	support
Asliye Ceza Mahkemesi	0.90	0.96	0.93	1998
Asliye Hukuk Mahkemesi	0.76	0.82	0.79	393
Ağır Ceza Mahkemesi	0.88	0.66	0.76	380
Bölge Adliye Mahkemesi	0.92	0.94	0.93	487
Ceza Dairesi	0.98	0.98	0.98	219
EMPTY	0.95	0.94	0.94	1325
OTHER	0.75	0.66	0.70	241
Ticaret Mahkemesi	0.73	0.70	0.72	84
Çocuk Mahkemesi	0.64	0.62	0.63	179
İş Mahkemesi	0.95	0.94	0.94	263
accuracy			0.89	5569
macro avg	0.85	0.82	0.83	5569
weighted avg	0.89	0.89	0.89	5569



Transformer

savasy/bert-turkish-text-classification from 🤗 - 10 epoch

	precision	recall	f1-score	support
Asliye Ceza Mahkemesi	0.93	0.94	0.93	1998
Asliye Hukuk Mahkemesi	0.79	0.82	0.81	393
Ağır Ceza Mahkemesi	0.83	0.69	0.76	380
Bölge Adliye Mahkemesi	0.91	0.96	0.94	487
Ceza Dairesi	0.98	0.98	0.98	219
EMPTY	0.96	0.93	0.94	1325
OTHER	0.79	0.70	0.74	241
Ticaret Mahkemesi	0.75	0.74	0.74	84
Çocuk Mahkemesi	0.60	0.78	0.68	179
İş Mahkemesi	0.93	0.94	0.93	263
accuracy			0.90	5569
macro avg	0.85	0.85	0.85	5569
weighted avg	0.90	0.90	0.90	5569



Comparison

Model	Accuracy	F1-Macro	F1-Weighted	Precision-Macro	Recall-Macro
LR	0.88	0.80	0.87	0.83	0.79
LinearSVC	0.88	0.81	0.88	0.84	0.80
MNB	0.65	0.32	0.57	0.49	0.31
FastText	0.89	0.82	0.89	0.84	0.81
LSTM	0.85	0.73	0.84	0.81	0.71
BERT-TR-Sent.	0.89	0.83	0.89	0.85	0.82
BERT-TR-Clf.	0.90	0.85	0.90	0.85	0.85

THANK YOU FOR YOUR ATTENTION!!!

A Work By Members of Group 1