# MNB

## Hyper-parameters:

### default

## Emotion

Score for Emotion: 0.4397625421953207

Accuracy for Emotion: 0.4397625421953207

Precision (Weighted) for Emotion: 0.48926029471973104

F1 Score (Weighted) for Emotion: 0.3719129846247145

F1 Score (Macro) for Emotion: 0.22479721508367329

precision recall f1-score support

0 0.53 0.52 0.53 2069

1 0.65 0.38 0.48 1226

2 0.56 0.20 0.30 1051

3 0.36 0.12 0.18 1615

4 0.46 0.16 0.24 2276

5 0.50 0.11 0.17 745

6 0.46 0.08 0.14 959

7 0.56 0.17 0.26 1208

8 0.61 0.06 0.11 389

9 0.53 0.08 0.14 926

10 0.44 0.15 0.22 1531

11 0.61 0.11 0.18 585

12 0.75 0.03 0.06 268

13 0.57 0.08 0.14 609

14 0.68 0.07 0.12 383

15 0.79 0.71 0.75 1481

16 0.00 0.00 0.00 66

17 0.52 0.17 0.25 872

18 0.73 0.42 0.53 1035

19 0.00 0.00 0.00 148

20 0.39 0.89 0.54 11077

21 0.57 0.20 0.30 875

22 0.00 0.00 0.00 122

23 0.49 0.06 0.11 961

24 0.00 0.00 0.00 152

25 0.59 0.07 0.12 287

26 0.54 0.13 0.21 736

27 0.53 0.13 0.21 712

accuracy 0.44 34364

macro\_avg 0.48 0.18 0.22 34364

weighted\_avg 0.49 0.44 0.37 34364

### Confusion Matrix

A screenshot of a computer

Description automatically generated with medium confidence

## Sentiment

Score for Sentiment: 0.6100570364334769

Accuracy for Emotion: 0.6100570364334769

Precision (Weighted) for Emotion: 0.6054869973993441

F1 Score (Weighted) for Emotion: 0.6028268711398485

F1 Score (Macro) for Emotion: 0.5676173771892744

precision recall f1-score support

0 0.56 0.31 0.40 3840

1 0.59 0.59 0.59 7596

2 0.57 0.57 0.57 11077

3 0.66 0.75 0.71 11851

accuracy 0.61 34364

macro\_avg 0.60 0.56 0.57 34364

weighted\_avg 0.61 0.61 0.60 34364

### Confusion Matrix

Chart, treemap chart

Description automatically generated

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# DT

## Hyper-parameters:

### default

## Emotion

Score for Emotion: 0.5957979280642532

Accuracy for Emotion: 0.5957979280642532

Precision (Weighted) for Emotion: 0.6123241872646431

F1 Score (Weighted) for Emotion: 0.592676569178555

F1 Score (Macro) for Emotion: 0.5123542638921981

precision recall f1-score support

0 0.56 0.82 0.67 2069

1 0.58 0.82 0.68 1226

2 0.45 0.72 0.55 1051

3 0.38 0.56 0.45 1615

4 0.47 0.57 0.51 2276

5 0.49 0.54 0.52 745

6 0.47 0.55 0.51 959

7 0.58 0.60 0.59 1208

8 0.49 0.55 0.52 389

9 0.44 0.45 0.45 926

10 0.54 0.47 0.50 1531

11 0.55 0.40 0.46 585

12 0.47 0.41 0.44 268

13 0.54 0.43 0.48 609

14 0.69 0.56 0.62 383

15 0.88 0.82 0.85 1481

16 0.40 0.35 0.37 66

17 0.58 0.46 0.51 872

18 0.75 0.69 0.72 1035

19 0.46 0.26 0.33 148

20 0.71 0.66 0.68 11077

21 0.67 0.37 0.48 875

22 0.55 0.17 0.26 122

23 0.58 0.22 0.32 961

24 0.55 0.19 0.28 152

25 0.67 0.51 0.57 287

26 0.68 0.38 0.49 736

27 0.70 0.41 0.52 712

accuracy 0.60 34364

macro\_avg 0.57 0.50 0.51 34364

weighted\_avg 0.61 0.60 0.59 34364

### Confusion Matrix

A screenshot of a computer

Description automatically generated with medium confidence

## Sentiment

Score for Sentiment: 0.7210452799441276

Accuracy for Emotion: 0.7210452799441276

Precision (Weighted) for Emotion: 0.7322662048390615

F1 Score (Weighted) for Emotion: 0.7234404452427878

F1 Score (Macro) for Emotion: 0.7081389607742599

precision recall f1-score support

0 0.58 0.72 0.64 3840

1 0.66 0.77 0.71 7596

2 0.71 0.67 0.69 11077

3 0.84 0.74 0.79 11851

accuracy 0.72 34364

macro\_avg 0.70 0.72 0.71 34364

weighted\_avg 0.73 0.72 0.72 34364

### Confusion Matrix

Chart, treemap chart

Description automatically generated

# MLP

## Hyper-parameters:

### default

## Emotion

Score for Emotion: 0.5758642765685019

Accuracy for Emotion: 0.5758642765685019

Precision (Weighted) for Emotion: 0.5688540009909064

F1 Score (Weighted) for Emotion: 0.5698661637580398

F1 Score (Macro) for Emotion: 0.507047923081078

precision recall f1-score support

0 0.64 0.67 0.65 2111

1 0.65 0.68 0.67 1213

2 0.53 0.54 0.53 1035

3 0.46 0.40 0.43 1684

4 0.46 0.36 0.41 2158

5 0.49 0.47 0.48 681

6 0.51 0.46 0.48 1025

7 0.56 0.48 0.52 1172

8 0.47 0.61 0.53 423

9 0.43 0.39 0.41 919

10 0.48 0.47 0.47 1576

11 0.52 0.46 0.49 588

12 0.47 0.49 0.48 276

13 0.45 0.39 0.42 583

14 0.55 0.54 0.54 338

15 0.84 0.82 0.83 1408

16 0.43 0.37 0.40 81

17 0.54 0.51 0.53 910

18 0.65 0.80 0.71 1000

19 0.46 0.39 0.42 180

20 0.63 0.70 0.66 11089

21 0.49 0.55 0.52 903

22 0.43 0.30 0.35 141

23 0.44 0.27 0.34 981

24 0.37 0.36 0.36 154

25 0.49 0.64 0.56 299

26 0.52 0.48 0.50 743

27 0.55 0.48 0.51 693

accuracy 0.58 34364

macro\_avg 0.52 0.50 0.51 34364

weighted\_avg 0.57 0.58 0.57 34364

### Confusion Matrix

A screenshot of a computer

Description automatically generated with medium confidence

## Sentiment

Score for Sentiment: 0.5605575602374578

Accuracy for Emotion: 0.5605575602374578

Precision (Weighted) for Emotion: 0.5669766498918233

F1 Score (Weighted) for Emotion: 0.5438949258055783

F1 Score (Macro) for Emotion: 0.4838282812103384

precision recall f1-score support

0 0.54 0.13 0.20 3871

1 0.56 0.46 0.50 7719

2 0.48 0.65 0.55 11089

3 0.67 0.69 0.68 11685

accuracy 0.56 34364

macro\_avg 0.56 0.48 0.48 34364

weighted\_avg 0.57 0.56 0.54 34364

### Confusion Matrix

Chart, treemap chart

Description automatically generated

# MNB (Grid Search CV)

## Hyper-parameters:

### alpha

## Emotion

### alpha\_emotion = 0.36

Best estimator (Emotion): MultinomialNB(alpha=0.36), Best Score: 0.3834754477508645

Accuracy for Emotion: 0.4887964148527529

Precision (Weighted) for Emotion: 0.48370589971275646

F1 Score (Weighted) for Emotion: 0.4637513743481372

F1 Score (Macro) for Emotion: 0.363446634702298

precision recall f1-score support

0 0.54 0.62 0.58 2111

1 0.59 0.62 0.61 1213

2 0.48 0.37 0.42 1035

3 0.41 0.27 0.32 1684

4 0.39 0.24 0.30 2158

5 0.37 0.30 0.33 681

6 0.46 0.28 0.35 1025

7 0.46 0.31 0.37 1172

8 0.52 0.26 0.35 423

9 0.48 0.22 0.30 919

10 0.43 0.30 0.35 1576

11 0.54 0.29 0.38 588

12 0.46 0.16 0.23 276

13 0.43 0.19 0.26 583

14 0.57 0.30 0.39 338

15 0.73 0.80 0.76 1408

16 0.20 0.01 0.02 81

17 0.50 0.36 0.42 910

18 0.65 0.62 0.63 1000

19 0.46 0.06 0.11 180

20 0.47 0.73 0.57 11089

21 0.51 0.40 0.45 903

22 0.56 0.06 0.11 141

23 0.38 0.18 0.25 981

24 0.41 0.07 0.12 154

25 0.59 0.32 0.41 299

26 0.44 0.31 0.36 743

27 0.48 0.34 0.40 693

accuracy 0.49 34364

macro\_avg 0.48 0.32 0.36 34364

weighted\_avg 0.48 0.49 0.46 34364

### Confusion Matrix

A screenshot of a computer

Description automatically generated with medium confidence

## Sentiment

### alpha\_sentiment=1

Best estimator (Sentiment): MultinomialNB(alpha=1), Best Score: 0.5383904367141189

Accuracy for Emotion: 0.6124723547898964

Precision (Weighted) for Emotion: 0.6070489450627047

F1 Score (Weighted) for Emotion: 0.6054871499390746

F1 Score (Macro) for Emotion: 0.5722786365590198

precision recall f1-score support

0 0.55 0.33 0.41 3871

1 0.61 0.60 0.60 7719

2 0.57 0.56 0.57 11089

3 0.66 0.76 0.71 11685

accuracy 0.61 34364

macro\_avg 0.60 0.56 0.57 34364

weighted\_avg 0.61 0.61 0.61 34364

### Confusion Matrix

Chart, treemap chart

Description automatically generated

# DT (Grid Search CV)

## Hyper-parameters:

### "criterion":("gini","entropy"),"max\_depth":(100,3),"min\_samples\_split":(12,5,30)

## Emotion

### Best estimator (Emotion): DecisionTreeClassifier(max\_depth=100, min\_samples\_split=30)

Best Score: 0.4044639513068846

Accuracy for Emotion: 0.5089628681177977

Precision (Weighted) for Emotion: 0.5139248586697427

F1 Score (Weighted) for Emotion: 0.4676219536378908

F1 Score (Macro) for Emotion: 0.37062609486706116

precision recall f1-score support

0 0.58 0.55 0.57 2111

1 0.60 0.68 0.64 1213

2 0.50 0.36 0.42 1035

3 0.40 0.20 0.27 1684

4 0.42 0.19 0.26 2158

5 0.44 0.20 0.28 681

6 0.46 0.25 0.32 1025

7 0.51 0.25 0.34 1172

8 0.54 0.31 0.40 423

9 0.44 0.15 0.23 919

10 0.44 0.21 0.29 1576

11 0.62 0.27 0.37 588

12 0.41 0.15 0.22 276

13 0.51 0.18 0.27 583

14 0.59 0.35 0.44 338

15 0.85 0.79 0.82 1408

16 0.38 0.11 0.17 81

17 0.60 0.37 0.46 910

18 0.71 0.66 0.68 1000

19 0.53 0.13 0.21 180

20 0.47 0.86 0.61 11089

21 0.63 0.31 0.42 903

22 0.70 0.05 0.09 141

23 0.46 0.09 0.15 981

24 0.49 0.12 0.19 154

25 0.58 0.50 0.54 299

26 0.57 0.26 0.36 743

27 0.51 0.31 0.39 693

accuracy 0.51 34364

macro\_avg 0.53 0.32 0.37 34364

weighted\_avg 0.51 0.51 0.47 34364

### Confusion Matrix

A screenshot of a computer

Description automatically generated with medium confidence

## Sentiment

### Best estimator (Sentiment): DecisionTreeClassifier(max\_depth=100, min\_samples\_split=5

Best Score: 0.515219404662324

Accuracy for Emotion: 0.6230939355139099

Precision (Weighted) for Emotion: 0.6687341188723662

F1 Score (Weighted) for Emotion: 0.6249230250322402

F1 Score (Macro) for Emotion: 0.5986613471716806

precision recall f1-score support

0 0.54 0.45 0.49 3871

1 0.69 0.50 0.58 7719

2 0.51 0.79 0.62 11089

3 0.85 0.60 0.70 11685

accuracy 0.62 34364

macro\_avg 0.65 0.59 0.60 34364

weighted\_avg 0.67 0.62 0.62 34364

### Confusion Matrix

Chart, treemap chart

Description automatically generated

# MLP (Grid Search CV)

## Hyper-parameters:

### "activation":("identity", "logistic", "tanh", "relu"),"hidden\_layer\_sizes":((5,5),(5,10)), "solver":("adam","sgd")

## Emotion

Unable to converge to a final model

## Sentiment

Unable to converge to a final model

# New Training/Test Split

# MNB

## Hyper-parameters:

### default

## Emotion

Score for Emotion: 0.39273658479804446

Accuracy for Emotion: 0.39273658479804446

Precision (Weighted) for Emotion: 0.3790727928793306

F1 Score (Weighted) for Emotion: 0.3214243457337185

F1 Score (Macro) for Emotion: 0.18140672572768532

precision recall f1-score support

0 0.50 0.48 0.49 550

1 0.46 0.30 0.37 301

2 0.42 0.16 0.23 261

3 0.17 0.06 0.09 420

4 0.25 0.10 0.15 555

5 0.26 0.06 0.10 155

6 0.30 0.07 0.11 239

7 0.37 0.12 0.18 305

8 0.46 0.05 0.09 115

9 0.20 0.04 0.07 228

10 0.27 0.09 0.14 372

11 0.42 0.11 0.17 136

12 1.00 0.03 0.05 74

13 0.36 0.05 0.09 175

14 0.62 0.05 0.09 100

15 0.70 0.71 0.70 347

16 0.00 0.00 0.00 11

17 0.44 0.14 0.21 216

18 0.58 0.40 0.47 225

19 0.00 0.00 0.00 46

20 0.38 0.82 0.52 2792

21 0.36 0.14 0.20 227

22 0.00 0.00 0.00 23

23 0.17 0.04 0.07 245

24 0.00 0.00 0.00 33

25 0.50 0.06 0.11 83

26 0.44 0.12 0.19 187

27 0.49 0.12 0.19 170

accuracy 0.39 8591

macro\_avg 0.36 0.15 0.18 8591

weighted\_avg 0.38 0.39 0.32 8591

### Confusion Matrix

A screenshot of a computer

Description automatically generated with medium confidence

## Sentiment

Score for Sentiment: 0.5509253870329415

Accuracy for Emotion: 0.5509253870329415

Precision (Weighted) for Emotion: 0.5407647987441085

F1 Score (Weighted) for Emotion: 0.5430198776222547

F1 Score (Macro) for Emotion: 0.5014829594840788

precision recall f1-score support

0 0.39 0.24 0.30 959

1 0.55 0.54 0.54 1918

2 0.50 0.50 0.50 2792

3 0.63 0.71 0.67 2922

accuracy 0.55 8591

macro\_avg 0.52 0.50 0.50 8591

weighted\_avg 0.54 0.55 0.54 8591

### Confusion Matrix

Graphical user interface, chart, treemap chart

Description automatically generated

# DT

## Hyper-parameters:

### default

## Emotion

Score for Emotion: 0.3620067512513095

Accuracy for Emotion: 0.3620067512513095

Precision (Weighted) for Emotion: 0.37844542808066867

F1 Score (Weighted) for Emotion: 0.3622201069186187

F1 Score (Macro) for Emotion: 0.28331844542697787

precision recall f1-score support

0 0.42 0.59 0.49 550

1 0.39 0.57 0.47 301

2 0.26 0.42 0.32 261

3 0.18 0.27 0.21 420

4 0.21 0.28 0.24 555

5 0.19 0.28 0.23 155

6 0.19 0.28 0.23 239

7 0.31 0.32 0.31 305

8 0.27 0.30 0.28 115

9 0.17 0.19 0.18 228

10 0.26 0.27 0.26 372

11 0.26 0.24 0.25 136

12 0.21 0.16 0.18 74

13 0.21 0.15 0.18 175

14 0.48 0.40 0.43 100

15 0.75 0.75 0.75 347

16 0.14 0.27 0.18 11

17 0.30 0.19 0.24 216

18 0.53 0.52 0.52 225

19 0.25 0.13 0.17 46

20 0.50 0.41 0.45 2792

21 0.39 0.23 0.29 227

22 0.00 0.00 0.00 23

23 0.23 0.09 0.13 245

24 0.07 0.03 0.04 33

25 0.43 0.31 0.36 83

26 0.32 0.17 0.22 187

27 0.43 0.24 0.31 170

accuracy 0.36 8591

macro\_avg 0.30 0.29 0.28 8591

weighted\_avg 0.38 0.36 0.36 8591

### Confusion Matrix

A screenshot of a computer

Description automatically generated with medium confidence

## Sentiment

Score for Sentiment: 0.5504597834943545

Accuracy for Emotion: 0.5504597834943545

Precision (Weighted) for Emotion: 0.569542883739723

F1 Score (Weighted) for Emotion: 0.5548763766687818

F1 Score (Macro) for Emotion: 0.5324586761773381

precision recall f1-score support

0 0.36 0.51 0.42 959

1 0.51 0.62 0.56 1918

2 0.52 0.46 0.49 2792

3 0.72 0.60 0.66 2922

accuracy 0.55 8591

macro\_avg 0.53 0.55 0.53 8591

weighted\_avg 0.57 0.55 0.55 8591

### Confusion Matrix

Chart, treemap chart

Description automatically generated

# MLP

## Hyper-parameters:

### default

## Emotion

Score for Emotion: 0.5971365382376906

Accuracy for Emotion: 0.5971365382376906

Precision (Weighted) for Emotion: 0.5888006332289856

F1 Score (Weighted) for Emotion: 0.588324768349283

F1 Score (Macro) for Emotion: 0.5227948773878628

precision recall f1-score support

0 0.64 0.72 0.68 5237

1 0.65 0.70 0.67 3015

2 0.61 0.48 0.54 2615

3 0.48 0.40 0.44 4202

4 0.54 0.37 0.44 5652

5 0.52 0.46 0.49 1781

6 0.56 0.40 0.47 2490

7 0.58 0.56 0.57 2907

8 0.47 0.54 0.50 1049

9 0.48 0.34 0.40 2369

10 0.53 0.47 0.50 3918

11 0.52 0.48 0.50 1484

12 0.41 0.51 0.45 725

13 0.49 0.43 0.45 1458

14 0.61 0.59 0.60 902

15 0.83 0.85 0.84 3520

16 0.42 0.41 0.42 178

17 0.54 0.51 0.53 2113

18 0.66 0.80 0.73 2428

19 0.45 0.41 0.43 406

20 0.64 0.75 0.69 27720

21 0.53 0.52 0.52 2217

22 0.44 0.27 0.34 354

23 0.47 0.33 0.39 2398

24 0.41 0.46 0.43 380

25 0.62 0.56 0.59 768

26 0.54 0.51 0.52 1920

27 0.53 0.51 0.52 1704

accuracy 0.60 85910

macro\_avg 0.54 0.51 0.52 85910

weighted\_avg 0.59 0.60 0.59 85910

### Confusion Matrix

Graphical user interface

Description automatically generated with medium confidence

## Sentiment

Score for Sentiment: 0.7235362588755675

Accuracy for Emotion: 0.7235362588755675

Precision (Weighted) for Emotion: 0.7224575726620288

F1 Score (Weighted) for Emotion: 0.722729062462972

F1 Score (Macro) for Emotion: 0.702261625427746

precision recall f1-score support

0 0.64 0.57 0.60 9499

1 0.71 0.73 0.72 19487

2 0.69 0.70 0.70 27720

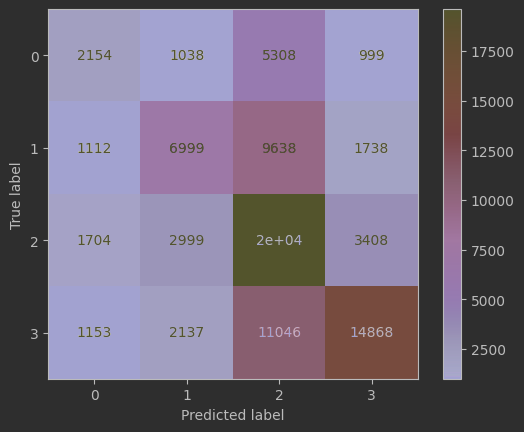
3 0.78 0.79 0.79 29204

accuracy 0.72 85910

macro\_avg 0.71 0.70 0.70 85910

weighted\_avg 0.72 0.72 0.72 85910

### Confusion Matrix



# MNB (Grid Search CV)

## Hyper-parameters:

### “alpha”: (0.5, 0, 0.36, 1)

## Emotion

### alpha\_emotion = 0.5

Best estimator (Emotion): MultinomialNB(alpha=0.5), Best Score: 0.3905984755012737

Accuracy for Emotion: 0.4847514841112792

Precision (Weighted) for Emotion: 0.4857895395369976

F1 Score (Weighted) for Emotion: 0.45367634569944093

F1 Score (Macro) for Emotion: 0.34276040965248367

precision recall f1-score support

0 0.54 0.61 0.57 5237

1 0.58 0.59 0.59 3015

2 0.50 0.34 0.40 2615

3 0.41 0.25 0.31 4202

4 0.43 0.23 0.30 5652

5 0.41 0.29 0.34 1781

6 0.47 0.24 0.32 2490

7 0.49 0.30 0.37 2907

8 0.55 0.21 0.30 1049

9 0.44 0.18 0.26 2369

10 0.42 0.27 0.33 3918

11 0.54 0.27 0.36 1484

12 0.58 0.12 0.19 725

13 0.46 0.19 0.26 1458

14 0.58 0.28 0.38 902

15 0.74 0.80 0.77 3520

16 0.20 0.01 0.01 178

17 0.47 0.31 0.37 2113

18 0.64 0.63 0.63 2428

19 0.52 0.03 0.05 406

20 0.45 0.76 0.57 27720

21 0.50 0.35 0.41 2217

22 0.39 0.03 0.05 354

23 0.43 0.17 0.24 2398

24 0.52 0.03 0.06 380

25 0.58 0.27 0.37 768

26 0.49 0.30 0.37 1920

27 0.51 0.33 0.40 1704

accuracy 0.48 85910

macro\_avg 0.49 0.30 0.34 85910

weighted\_avg 0.49 0.48 0.45 85910

### Confusion Matrix

Graphical user interface

Description automatically generated with low confidence

## Sentiment

### alpha\_sentiment=1

Best estimator (Sentiment): MultinomialNB(alpha=1),

Best Score: 0.543696292227927

Accuracy for Emotion: 0.6173320917238971

Precision (Weighted) for Emotion: 0.6122283592212618

F1 Score (Weighted) for Emotion: 0.6113570497954467

F1 Score (Macro) for Emotion: 0.5795603043690769

precision recall f1-score support

0 0.55 0.35 0.42 9499

1 0.62 0.61 0.61 19487

2 0.58 0.57 0.57 27720

3 0.66 0.75 0.71 29204

accuracy 0.62 85910

macro\_avg 0.60 0.57 0.58 85910

weighted\_avg 0.61 0.62 0.61 85910

### Confusion Matrix

Chart, treemap chart

Description automatically generated

# DT (Grid Search CV)

## Hyper-parameters:

### "criterion":("gini","entropy"),"max\_depth":(100,3),"min\_samples\_split":(12,5,30)

## Emotion

Best estimator (Emotion):

### DecisionTreeClassifier(max\_depth=100, min\_samples\_split=30),

Best Score: 0.3984285880572692

Accuracy for Emotion: 0.4020486555697823

Precision (Weighted) for Emotion: 0.35505674855784475

F1 Score (Weighted) for Emotion: 0.3474123156775421

F1 Score (Macro) for Emotion: 0.23204273599853362

precision recall f1-score support

0 0.45 0.42 0.43 5237

1 0.48 0.49 0.48 3015

2 0.31 0.19 0.23 2615

3 0.14 0.07 0.10 4202

4 0.18 0.08 0.11 5652

5 0.20 0.08 0.11 1781

6 0.27 0.13 0.18 2490

7 0.31 0.14 0.20 2907

8 0.30 0.18 0.22 1049

9 0.15 0.06 0.08 2369

10 0.17 0.08 0.11 3918

11 0.31 0.15 0.20 1484

12 0.22 0.05 0.09 725

13 0.25 0.13 0.17 1458

14 0.45 0.24 0.31 902

15 0.78 0.73 0.76 3520

16 0.04 0.01 0.01 178

17 0.33 0.20 0.25 2113

18 0.57 0.56 0.57 2428

19 0.29 0.04 0.07 406

20 0.41 0.78 0.54 27720

21 0.43 0.23 0.30 2217

22 0.20 0.03 0.05 354

23 0.17 0.03 0.05 2398

24 0.18 0.04 0.07 380

25 0.40 0.33 0.36 768

26 0.36 0.15 0.22 1920

27 0.37 0.18 0.25 1704

accuracy 0.40 85910

macro avg 0.31 0.21 0.23 85910

weighted avg 0.36 0.40 0.35 85910

### Confusion Matrix

A screenshot of a computer

Description automatically generated with medium confidence

## Sentiment

Best estimator (Sentiment):

### DecisionTreeClassifier(max\_depth=100, min\_samples\_split=5),

Best Score: 0.49976719823070653

Accuracy for Emotion: 0.5078570597136538

Precision (Weighted) for Emotion: 0.5386909680913343

F1 Score (Weighted) for Emotion: 0.5015902957155978

F1 Score (Macro) for Emotion: 0.45784838872341016

precision recall f1-score support

0 0.35 0.23 0.28 9499

1 0.53 0.36 0.43 19487

2 0.43 0.71 0.53 27720

3 0.71 0.51 0.59 29204

accuracy 0.51 85910

macro avg 0.51 0.45 0.46 85910

weighted avg 0.54 0.51 0.50 85910

### Confusion Matrix

Chart, treemap chart

Description automatically generated

# MLP (Grid Search CV)

## Hyper-parameters:

### "activation":("identity", "logistic", "tanh", "relu"),"hidden\_layer\_sizes":((5,5),(5,10)), "solver":("adam","sgd")

## Emotion

Unable to converge to a final model

## Sentiment

Unable to converge to a final model