Lab 02 Supervised Learning
'Hate Speech Classifier'

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Einleitung:

In dem Lab wurden drei verschiedene Modelle: Linear SVC, Logistic Regression und CNN auf den zur Verfügung gestellten Testdaten trainiert. Im ersten Schritt wurde grid search mit cross validation auf den Machine Learning Modellen Linear SVC und Logistic Regression ausgeführt um die optimalen Parameter zu finden. Die Parameterkombination für das CNN-Modell wurde mit Hilfe von den Kurven für Training and Validation Accuracy bestimmt. Im zweiten Schritt wurden die Scores der verschiedenen Ansätze miteinander verglichen. Anschliessend wurde jedes der Modelle auf einem Set von 'Review' - Daten, die dem Modell unbekannt sind, auf einer 'hate_speech_predicat' - Applikation ausgeführt. Zur Optimierung der Laufzeit der 'hate_speech_predicat' - Applikationen wurden die trainierten Modelle jeweils gespeichert und in den Applikationen zur Wiederverwendung geladen.
Aus den unten geschilderten Ergebnissen geht es hervor, dass nach dem Parameter - Tuning liefern alle der drei Modelle ziemlich gute und ähnliche Resultate

Linear Support Vector Classification (Baseline):

Einführung:
Es handelt sich um ein Basismodell, welches im Lab schon enthalten war und auf dem Linear Support Vector Classification basiert. Das Modell ist in der Lage die gegebenen Daten in zwei Klassen 0 = hate comment und 1 = no hate comment aufzuteilen.
Tool:
- LinearSVC von scikit-learn

Scores / Beobachtungen:
Ohne Parameter Tuning

```
Classification and evaluation
              precision    recall  f1-score   support

           0       0.97      0.90      0.94      5734
           1       0.48      0.79      0.59       649

    accuracy                           0.89      6383
   macro avg       0.73      0.84      0.77      6383
weighted avg       0.92      0.89      0.90      6383

[[5177  557]
 [ 139  510]]
Using 3 folds
```

Das Modell liefert rechte gute Ergebnisse mit einer Accuracy von 89%, es gibt aber eindeutig Verbesserungspotential. F1 Score für die Klasse 0 ist sehr gut und beträgt 94%, für die Klasse 1 ist mit 59% wesentlich schlechter. Im Anhang 'baseline' kann man schon in dem kleinen Set ein paar Einträge finden, die eindeutig kein 'hate comment' sind, wurden jedoch als solches eingestuft wie z.B. 'what do you want to know?'

***Mit** Parameter Tuning*

```
Best parameters set found on development set:

{'C': 1, 'tol': 0.001}

Grid scores on development set:

0.602 (+/-0.006) for {'C': 0.01, 'tol': 0.001}
0.602 (+/-0.006) for {'C': 0.01, 'tol': 0.0001}
0.764 (+/-0.011) for {'C': 0.2, 'tol': 0.001}
0.764 (+/-0.011) for {'C': 0.2, 'tol': 0.0001}
0.771 (+/-0.015) for {'C': 0.3, 'tol': 0.001}
0.771 (+/-0.015) for {'C': 0.3, 'tol': 0.0001}
0.778 (+/-0.012) for {'C': 0.5, 'tol': 0.001}
0.778 (+/-0.012) for {'C': 0.5, 'tol': 0.0001}
0.781 (+/-0.012) for {'C': 0.75, 'tol': 0.001}
0.781 (+/-0.012) for {'C': 0.75, 'tol': 0.0001}
0.784 (+/-0.012) for {'C': 1, 'tol': 0.001}
0.784 (+/-0.012) for {'C': 1, 'tol': 0.0001}

Detailed classification report:

The model is trained on the full development set.
The scores are computed on the full evaluation set.

              precision    recall  f1-score   support

           0       0.96      0.99      0.97      5734
           1       0.91      0.60      0.72       649

    accuracy                           0.95      6383
   macro avg       0.93      0.80      0.85      6383
weighted avg       0.95      0.95      0.95      6383
```
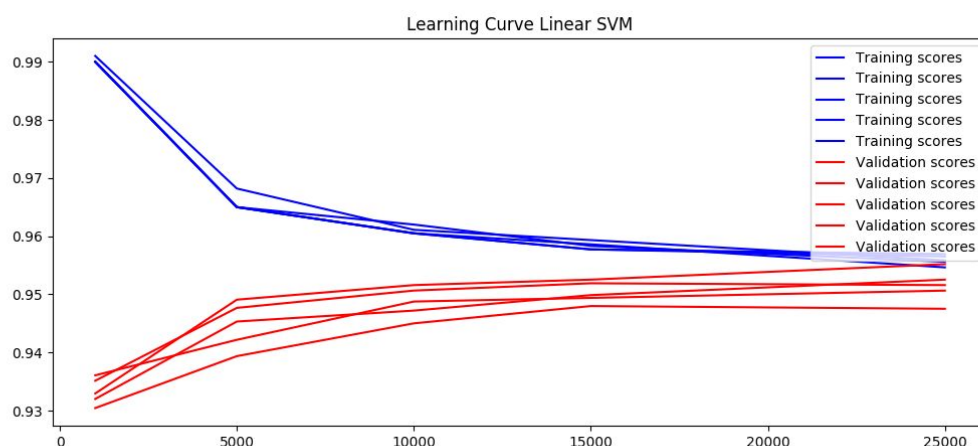
Man kann eine deutliche Verbesserung beobachten, vor allem im Bezug auf F1 score für die Klasse 1. Alle Reviews werden korrekt klassifiziert.

Learning Curve:

Resultate:

Text-Document: 'hate_speech_predict_baseline.txt' oder Anhang 'baseline' und 'LinearSVC with parameter tuning'

Logistic Regression:

Einführung:
Ähnlich wie LinearSVC kann man mithilfe von Logistic Regression die Daten in zwei Klassen
(0 = hate comment und 1 = no) aufteilen.
Tool:
● LogisticRegression von scikit-learn
Scores / Beobachtungen:
Mit Parameter Tuning

```
Best parameters set found on development set:

{'C': 0.25, 'penalty': 'none', 'solver': 'newton-cg', 'tol': 0.001}

Grid scores on development set:

0.737 (+/-0.015) for {'C': 0.25, 'penalty': 'l1', 'solver': 'saga', 'tol': 0.001}
0.737 (+/-0.015) for {'C': 0.25, 'penalty': 'l1', 'solver': 'saga', 'tol': 0.0001}
0.765 (+/-0.019) for {'C': 0.5, 'penalty': 'l1', 'solver': 'saga', 'tol': 0.001}
0.765 (+/-0.019) for {'C': 0.5, 'penalty': 'l1', 'solver': 'saga', 'tol': 0.0001}
0.776 (+/-0.010) for {'C': 0.75, 'penalty': 'l1', 'solver': 'saga', 'tol': 0.001}
0.775 (+/-0.010) for {'C': 0.75, 'penalty': 'l1', 'solver': 'saga', 'tol': 0.0001}
0.781 (+/-0.007) for {'C': 1, 'penalty': 'l1', 'solver': 'saga', 'tol': 0.001}
0.781 (+/-0.007) for {'C': 1, 'penalty': 'l1', 'solver': 'saga', 'tol': 0.0001}
0.666 (+/-0.007) for {'C': 0.25, 'solver': 'newton-cg', 'tol': 0.001}
0.666 (+/-0.007) for {'C': 0.25, 'solver': 'newton-cg', 'tol': 0.0001}
0.666 (+/-0.007) for {'C': 0.25, 'solver': 'lbfgs', 'tol': 0.001}
0.666 (+/-0.007) for {'C': 0.25, 'solver': 'lbfgs', 'tol': 0.0001}
0.710 (+/-0.007) for {'C': 0.5, 'solver': 'newton-cg', 'tol': 0.001}
0.710 (+/-0.007) for {'C': 0.5, 'solver': 'newton-cg', 'tol': 0.0001}
0.710 (+/-0.007) for {'C': 0.5, 'solver': 'lbfgs', 'tol': 0.001}
0.710 (+/-0.007) for {'C': 0.5, 'solver': 'lbfgs', 'tol': 0.0001}
0.730 (+/-0.008) for {'C': 0.75, 'solver': 'newton-cg', 'tol': 0.001}
0.730 (+/-0.008) for {'C': 0.75, 'solver': 'newton-cg', 'tol': 0.0001}
0.730 (+/-0.008) for {'C': 0.75, 'solver': 'lbfgs', 'tol': 0.001}
0.730 (+/-0.008) for {'C': 0.75, 'solver': 'lbfgs', 'tol': 0.0001}
0.742 (+/-0.008) for {'C': 1, 'solver': 'newton-cg', 'tol': 0.001}
0.742 (+/-0.008) for {'C': 1, 'solver': 'newton-cg', 'tol': 0.0001}
0.742 (+/-0.008) for {'C': 1, 'solver': 'lbfgs', 'tol': 0.001}
0.742 (+/-0.008) for {'C': 1, 'solver': 'lbfgs', 'tol': 0.0001}
0.791 (+/-0.009) for {'C': 0.25, 'penalty': 'none', 'solver': 'newton-cg', 'tol': 0.001}
0.791 (+/-0.010) for {'C': 0.25, 'penalty': 'none', 'solver': 'newton-cg', 'tol': 0.0001}
0.791 (+/-0.009) for {'C': 0.5, 'penalty': 'none', 'solver': 'newton-cg', 'tol': 0.001}
0.791 (+/-0.010) for {'C': 0.5, 'penalty': 'none', 'solver': 'newton-cg', 'tol': 0.0001}
0.791 (+/-0.009) for {'C': 0.75, 'penalty': 'none', 'solver': 'newton-cg', 'tol': 0.001}
0.791 (+/-0.010) for {'C': 0.75, 'penalty': 'none', 'solver': 'newton-cg', 'tol': 0.0001}
0.791 (+/-0.009) for {'C': 1, 'penalty': 'none', 'solver': 'newton-cg', 'tol': 0.001}
0.791 (+/-0.010) for {'C': 1, 'penalty': 'none', 'solver': 'newton-cg', 'tol': 0.0001}


Detailed classification report:

The model is trained on the full development set.
The scores are computed on the full evaluation set.

              precision    recall  f1-score   support

           0       0.96      0.99      0.97      5734
           1       0.86      0.63      0.73       649

    accuracy                           0.95      6383
   macro avg       0.91      0.81      0.85      6383
weighted avg       0.95      0.95      0.95      6383
```

Die Verbesserung ist hier gegenüber dem Ergebnisse ohne Parameter Tuning auch vor
allem im Bezug auf F1 score für die Klasse 1 zu beobachten.

***Ohne** Parameter Tuning*

```
              precision    recall  f1-score   support

           0       0.95      1.00      0.97      5734
           1       0.96      0.53      0.68       649

    accuracy                           0.95      6383
   macro avg       0.95      0.77      0.83      6383
weighted avg       0.95      0.95      0.94      6383

[[5718    16]
 [ 303   346]]
```

Im Anhang 'regression' werden in dem kleinen Set keine Einträge gefunden, die auffällig unpassend eingeteilt wurden.

Learning Curve:
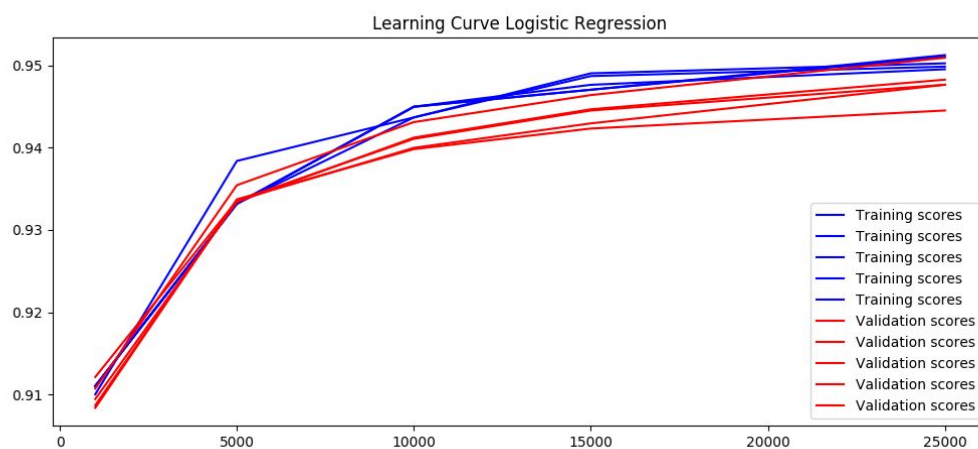
Resultate:

Text-Document: 'hate_speech_predict_regression.txt' oder Anhang regression
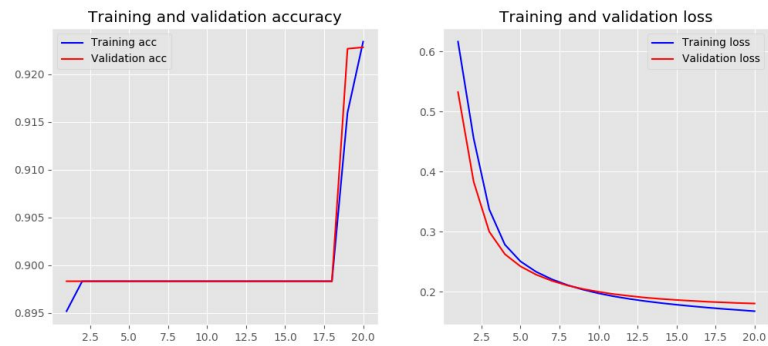
Deep Learning CNN Keras:

Einführung:

Vorgehen:

Im ersten Schritt wurde nach einem passenden Modell gesucht. Die folgenden Einstellungen wurden dabei justiert: Dense der Layers, Anzahl der epochs, Batch Size. Das Modell wurde durchs Plotten und Analyse der Kurven für Training and Validation Accuracy ausgewählt. Alle Modelle basieren auf 2 Layers und als Aktivierungsfunktion wurde 'relu' verwendet. Hinzufügen zusätzlicher Layers hat keine bedeutende Verbesserung gebracht und das Trainieren verlangsamt. Das Anwenden einer anderen Aktivierungsfunktion wie 'tanh', 'selu', 'elu'... hat keinen erwähnenswerten Einfluss auf die Scores ausgeübt. Beiliegend die Resultate.

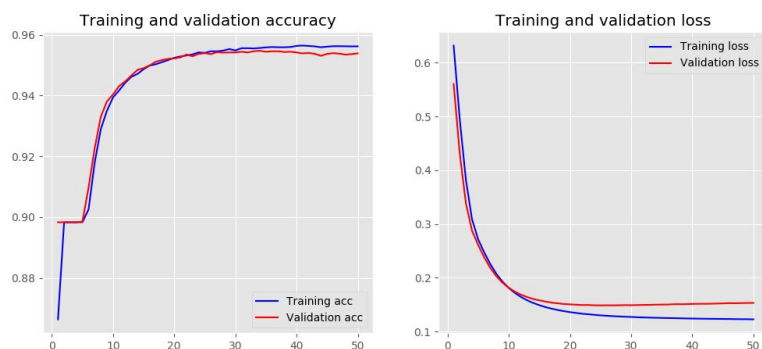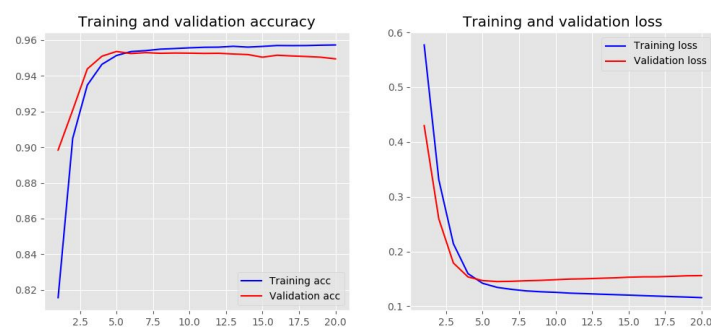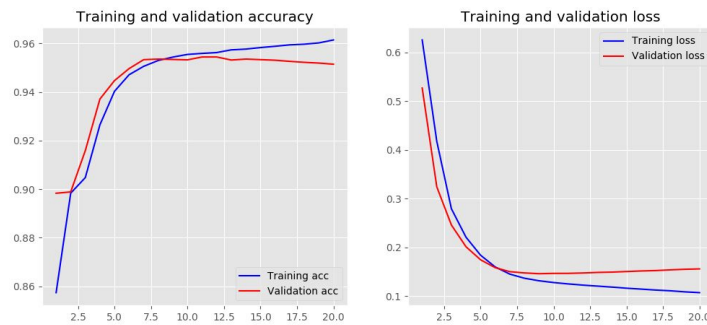|	
Dense: 4 epochs: 20 Batch Size: 512 Training Accuracy: 0.9232 Validation Accuracy: 0.9220 F1 score weighted: 0.947567 F1 score micro: 0.952217 F1 score macro: 0.844306	 Die Ergebnisse im Bezug auf Accuracy sind schlechter als die,welche vom Logistic Regression geliefert wurden. F1 Score ist ein wenig besser geworden.
Dense: 4 epochs: 50 Batch Size: 512 Training Accuracy: 0.9565 Validation Accuracy: 0.9539 F1 score weighted: 0.948029 F1 score micro: 0.951277 F1 score macro: 0.849146	 Das Erhöhen der Anzahl der Iterationen steigert die Accuracy um ca. 3%. F1 Score hat sich um 0.05% verbessert.
Dense: 16 epochs: 20 Batch Size: 256 Training Accuracy: 0.9591 Validation Accuracy: 0.9496 F1 score weighted: 0.947210 F1 score micro: 0.950337 F1 score macro: 0.847211	 Keine deutliche Verbesserung gegenüber dem oberen Modell. Zusätzlich gehen die Kurven der Training and Validation Accuracy leicht auseinander.

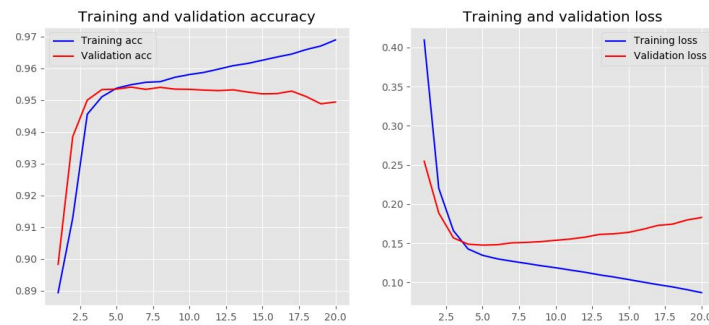|	

Dense: 16
epochs: 20
Batch Size: 512
 	
Training Accuracy:
0.9632
Validation Accuracy:
0.9514
 	
`F1 score weighted: 0.950267`
`F1 score micro: 0.953313`
`F1 score macro: 0.855797`
	
	Eine leichte Verbesserung ist zu beobachten. Die Tendenz sich voneinander entfernenden Kurven kann beobachtet werden, welche jedoch noch nicht als 'Overfitting' eingestuft werden kann. F1 Score macro ist um ca. 0.2% besser gegenüber Logistic Regression geworden.

Dense: 16
epochs: 50
Batch Size: 512
 	
Training Accuracy:
0.9688
Validation Accuracy:
0.9441
 	
`F1 score weighted: 0.948722`
`F1 score micro: 0.950807`
`F1 score macro: 0.854064`
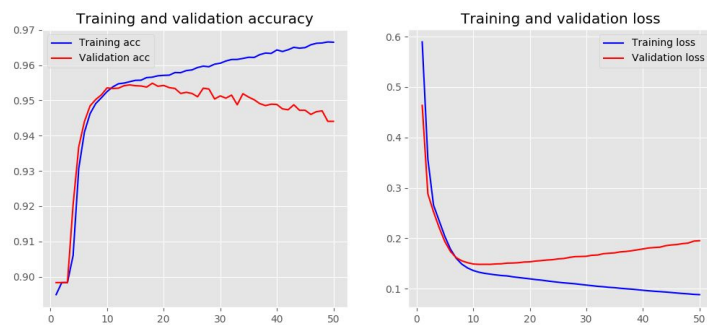	
	Es ist deutlich zu erkennen, dass 50 Iterationen zu viele sind. Das Modell neigt zu 'Overfitting'

Dense: 32
epochs: 20
Batch Size: 256
 	
Training Accuracy:
0.9738
Validation Accuracy:
0.9494
 	
`F1 score weighted: 0.942980`
`F1 score micro: 0.945167`
`F1 score macro: 0.838068`
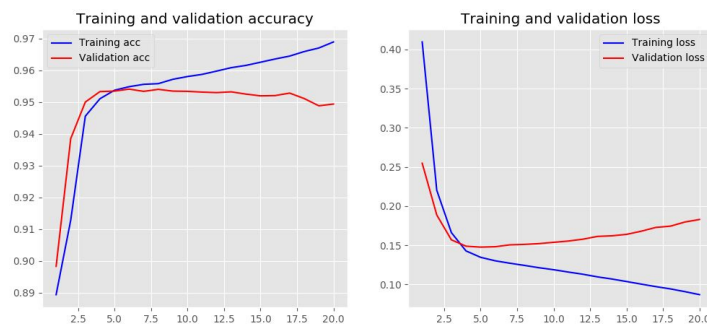	
	Dichte von 32 pro Layer bringt auch keine Verbesserung. Schon nach der fünften Iteration entfernen sich die beiden Kurven voneinander. Am Modell kann leichtes 'Overfitting' beobachtet werden.

|	
Dense: 64 epochs: 20 Batch Size: 256 Training Accuracy: 0.9940 Validation Accuracy: 0.9450 F1 score weighted: 0.941765 F1 score micro: 0.944540 F1 score macro: 0.833198	Training and validation accuracy / Training and validation loss
	Dito oben. Deutlich zu hohe Dichte pro Layer.

Alle oben aufgelisteten Modelle wurden mit zwei Klassen trainiert. Wenn man jedoch die Testdaten beobachtet, werden diese in 6 Klassen unterteilt. Aus diesem Grund wurde ein neuer Versuch gestartet das Modell mit 6 Klassen zu trainieren.

Klassen: 6 Dense: 16 epochs: 20 Batch Size: 512 Training Accuracy: 0.9914 Validation Accuracy: 0.9836 F1 score weighted: 0.950384 F1 score micro: 0.953627 F1 score macro: 0.285205	Training and validation accuracy / Training and validation loss
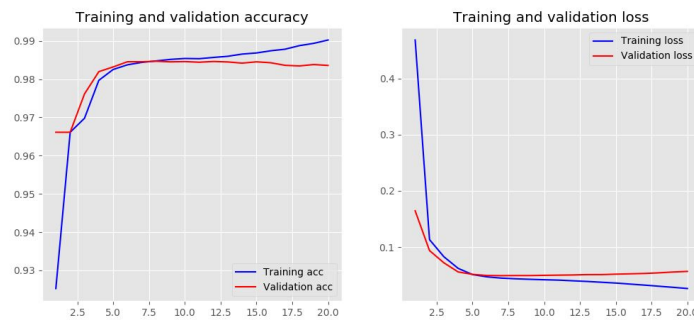
Man kann beobachten, dass die Accuracy sehr gestiegen ist und erreicht um 99%, was ein sehr gutes Ergebnis ist.

Da die 6 Labels sich auf die verschiedenen Klassen von toxischen Kommentaren beziehen braucht man noch eine siebte Klasse für die Gewichtung nicht toxischer Kommentare. Nun kann dieses Modell auch für die Ausführung der Applikation verwendet werden. Resultate im Anhang 'keras 7 classes'

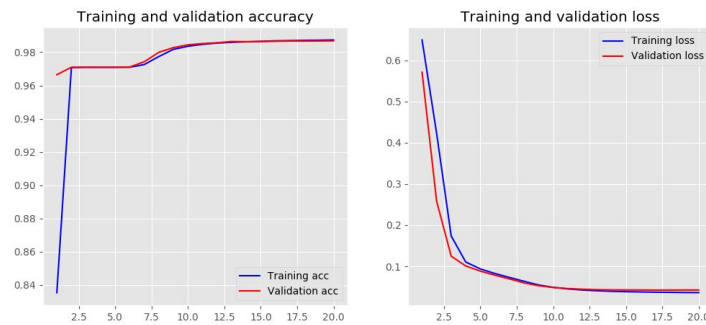|	
Klassen : 7 Dense: 16 epochs: 20 Batch Size: 512 Training Accuracy: 0.9877 Validation Accuracy: 0.9868	

Tool:
- Sequential von keras, TensorFlow as Backend

Beobachtungen:
- Die meisten Erkenntnisse wurden oben dokumentiert.
- Für die Applikation mit 2 Klassen wurde das folgende Modell verwendet: Dense: 16, Iterationen: 20, Batch Size: 512 => die Ergebnisse sind sehr ähnlich wie die von Logistic Regression. Die Differenz ist jedoch, dass die nicht eindeutige Kommentare wie 'You are a sad strange little man, and you have my pity.' gefunden werden konnten.
- Bei der Applikation mit 7 Klassen konnte ein interessantes Phänomen beobachtet werden. Die Wahrscheinlichkeitsverteilung konzentriert sich nur auf die ersten beiden Klassen 'neutral' und 'toxic'. Die Gewichtung bei den restlichen Klassen fällt so gering aus, dass diese ignoriert werden kann. Das erklärt, warum das Modell so gut für nur zwei Klassen trainiert werden konnte, siehe 'keras 7 classes'

Resultate:
Text-Document: 'hate_speech_predict_keras.txt' oder Anhang 'keras' und
'hate_speech_predict_keras_6_classes.txt' oder Anhang 'keras 7 classes'

SUPPROT VECTOR CLASSIFICATION (SVC) BASELINE

I don't get why negroes always traveling to white countries. Take
your ass to Africa!
1
It is a hate comment

I don't get why white girls always traveling to white countries. Go
to Africa!
0
It is NOT a hate comment

Only a stupid person considers Google a source of education. I get
my facts from real life. You could try getting education from a
school. You know what a school is don't you. Its [sic] the place
where white people have to pay extra so that 'some people' can get
in for a massive discount. Coconuts like you (brown on outside,
white on inside) won't survive one day among real black people in
Africa.
1
It is a hate comment

What a bunch of bull$h!+ from an egoistical liberal idiot. I didn't
vote for Trump, but I voted. So many people who are mad, didn't.
They are world traveling, airbnbers, like this Gen-Y poop, but
they're not registered voters. Yet they sure complain when the
person they didn't vote for doesn't get elected.
1
It is a hate comment

I miss you. Let's see each other soon!
0
It is NOT a hate comment

I can't stop thinking about you.
1
It is a hate comment

Every time I see you I get butterflies in my tummy.
0
It is NOT a hate comment

You are the light in my life.
0
It is NOT a hate comment

Are you always this stupid or are you making a special effort today
1
It is a hate comment

Calling you an idiot would be an insult to all the stupid people.
1
It is a hate comment

You are a sad strange little man, and you have my pity.
1
It is a hate comment

You are my sunshine and I can not live without you
1
It is a hate comment

The world is stupid
1
It is a hate comment

The world is wonderful
0
It is NOT a hate comment

what do you want to know?
1
It is a hate comment

it is an absolute shit
1
It is a hate comment

I don't get why negroes always traveling to white countries. Take
your ass to Africa!
1
It is a hate comment

I don't get why white girls always traveling to white countries. Go
to Africa!
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person they didn't vote for doesn't get elected.
1
It is a hate comment

I miss you. Let's see each other soon!
0
It is NOT a hate comment

I can't stop thinking about you.
0
It is NOT a hate comment

Every time I see you I get butterflies in my tummy.
0
It is NOT a hate comment

You are the light in my life.
0
It is NOT a hate comment

Are you always this stupid or are you making a special effort today
1
It is a hate comment

Calling you an idiot would be an insult to all the stupid people.
1
It is a hate comment

You are a sad strange little man, and you have my pity.
0

It is NOT a hate comment

You are my sunshine and I can not live without you
0
It is NOT a hate comment

The world is stupid
1
It is a hate comment

The world is wonderful
0
It is NOT a hate comment

what do you want to know?
0
It is NOT a hate comment

it is an absolute shit
1
It is a hate comment

LOGISTIC REGRESSION

I don't get why negroes always traveling to white countries. Take
your ass to Africa!
1
It is a hate comment

I don't get why white girls always traveling to white countries. Go
to Africa!
0
It is NOT a hate comment

Only a stupid person considers Google a source of education. I get
my facts from real life. You could try getting education from a
school. You know what a school is don't you. Its [sic] the place
where white people have to pay extra so that 'some people' can get
in for a massive discount. Coconuts like you (brown on outside,
white on inside) won't survive one day among real black people in
Africa.
1
It is a hate comment

What a bunch of bull$h!+ from an egoistical liberal idiot. I didn't
vote for Trump, but I voted. So many people who are mad, didn't.
They are world traveling, airbnbers, like this Gen-Y poop, but
they're not registered voters. Yet they sure complain when the
person they didn't vote for doesn't get elected.
1
It is a hate comment

I miss you. Let's see each other soon!
0
It is NOT a hate comment

I can't stop thinking about you.
0
It is NOT a hate comment

Every time I see you I get butterflies in my tummy.
0
It is NOT a hate comment

You are the light in my life.
0
It is NOT a hate comment

Are you always this stupid or are you making a special effort today
1
It is a hate comment

Calling you an idiot would be an insult to all the stupid people.
1
It is a hate comment

```
You are a sad strange little man, and you have my pity.
0
It is NOT a hate comment
```

You are my sunshine and I can not live without you
0
It is NOT a hate comment

The world is stupid
1
It is a hate comment

The world is wonderful
0
It is NOT a hate comment

what do you want to know?
0
It is NOT a hate comment

it is an absolute shit
1
It is a hate comment

KERAS

I don't get why negroes always traveling to white countries. Take
your ass to Africa!
not hate 0.0018118334 hate 0.99871814
It is a hate comment

I don't get why white girls always traveling to white countries. Go
to Africa!
not hate 0.91857874 hate 0.08338035
It is NOT a hate comment

Only a stupid person considers Google a source of education. I get
my facts from real life. You could try getting education from a
school. You know what a school is don't you. Its [sic] the place
where white people have to pay extra so that 'some people' can get
in for a massive discount. Coconuts like you (brown on outside,
white on inside) won't survive one day among real black people in
Africa.
not hate 0.06390501 hate 0.93069065
It is a hate comment

What a bunch of bull$h!+ from an egoistical liberal idiot. I didn't
vote for Trump, but I voted. So many people who are mad, didn't.
They are world traveling, airbnbers, like this Gen-Y poop, but
they're not registered voters. Yet they sure complain when the
person they didn't vote for doesn't get elected.
not hate 0.10069539 hate 0.8849401
It is a hate comment

I miss you. Let's see each other soon!
not hate 0.9426023 hate 0.05559118
It is NOT a hate comment

I can't stop thinking about you.
not hate 0.6449997 hate 0.3479226
It is NOT a hate comment

Every time I see you I get butterflies in my tummy.
not hate 0.977434 hate 0.024424898
It is NOT a hate comment

You are the light in my life.
not hate 0.9798075 hate 0.021369899
It is NOT a hate comment

Are you always this stupid or are you making a special effort today
not hate 0.059514306 hate 0.9280194
It is a hate comment

Calling you an idiot would be an insult to all the stupid people.
not hate 0.0002292058 hate 0.999859
It is a hate comment

You are a sad strange little man, and you have my pity.
not hate 0.55370593 hate 0.45258057
It is not clear if it's hate comment

You are my sunshine and I can not live without you
not hate 0.79189074 hate 0.20868471
It is NOT a hate comment

The world is stupid
not hate 0.0027705743 hate 0.99794596
It is a hate comment

The world is wonderful
not hate 0.9289933 hate 0.07069575
It is NOT a hate comment

what do you want to know?
not hate 0.8565512 hate 0.13973302
It is NOT a hate comment

it is an absolute shit
not hate 0.0013005944 hate 0.99908507
It is a hate comment

KERAS 7 CLASSES

I don't get why negroes always traveling to white countries. Take
your ass to Africa!
neutral 0.0013159623
toxic 0.99875367
severe_toxic 0.00083772035
obscene 0.0009720544
threat 0.0010536978
insult 0.002018842
identity_hate 0.00094833615
result: The comment is toxic

I don't get why white girls always traveling to white countries. Go
to Africa!
neutral 0.85309714
toxic 0.13040516
severe_toxic 0.0014930221
obscene 0.005017804
threat 0.004975261
insult 0.0021103956
identity_hate 0.0031263507
result: The comment is neutral

Only a stupid person considers Google a source of education. I get
my facts from real life. You could try getting education from a
school. You know what a school is don't you. Its [sic] the place
where white people have to pay extra so that 'some people' can get
in for a massive discount. Coconuts like you (brown on outside,
white on inside) won't survive one day among real black people in
Africa.
neutral 0.07934534
toxic 0.9121575
severe_toxic 9.505993e-06
obscene 3.1446743e-05
threat 4.1798423e-05
insult 2.2632194e-05
identity_hate 2.1510717e-05
result: The comment is toxic

What a bunch of bull$h!+ from an egoistical liberal idiot. I didn't
vote for Trump, but I voted. So many people who are mad, didn't.
They are world traveling, airbnbers, like this Gen-Y poop, but
they're not registered voters. Yet they sure complain when the
person they didn't vote for doesn't get elected.
neutral 0.13509879
toxic 0.8699682
severe_toxic 7.161645e-05
obscene 0.00023637459
threat 0.00024436813
insult 0.00015162911
identity_hate 0.00014107156
result: The comment is toxic

I miss you. Let's see each other soon!
neutral 0.9532005
toxic 0.044732537
severe_toxic 0.00011916373
obscene 0.000690404
threat 0.00065129367
insult 0.00019536541
identity_hate 0.00031948308
result: The comment is neutral

I can't stop thinking about you.
neutral 0.53839445
toxic 0.4311352
severe_toxic 0.0008350565
obscene 0.0020771655
threat 0.0022838677
insult 0.0014460545
identity_hate 0.0014666184
result: The comment is neutral

Every time I see you I get butterflies in my tummy.
neutral 0.9759663
toxic 0.025680333
severe_toxic 0.00052682776
obscene 0.0026565478
threat 0.0025812269
insult 0.00077805785
identity_hate 0.0012738942
result: The comment is neutral

You are the light in my life.
neutral 0.9764009
toxic 0.024488475
severe_toxic 0.00040933836
obscene 0.0021387108
threat 0.0020484661
insult 0.0006090695
identity_hate 0.0010087097
result: The comment is neutral

Are you always this stupid or are you making a special effort today
neutral 0.056268934
toxic 0.9431206
severe_toxic 0.00018425059
obscene 0.0004656474
threat 0.00045935257
insult 0.00038684814
identity_hate 0.00030432563
result: The comment is toxic

Calling you an idiot would be an insult to all the stupid people.
neutral 2.4963876e-05
toxic 0.99997795
severe_toxic 0.0001618429

obscene 0.00021110938
threat 0.00023529955
insult 0.00064012356
identity_hate 0.00019467795
result: The comment is toxic

You are a sad strange little man, and you have my pity.
neutral 0.50186086
toxic 0.47363746
severe_toxic 0.0007238994
obscene 0.0021362414
threat 0.0022326654
insult 0.001191129
identity_hate 0.0013952067
result: The comment is neutral

You are my sunshine and I can not live without you
neutral 0.7787199
toxic 0.19989404
severe_toxic 0.0008070498
obscene 0.0025013422
threat 0.0026031197
insult 0.0012568382
identity_hate 0.0015776701
result: The comment is neutral

The world is stupid
neutral 0.0009125067
toxic 0.99914384
severe_toxic 0.00046945285
obscene 0.00065203867
threat 0.00064039783
insult 0.0012430175
identity_hate 0.0005185659
result: The comment is toxic

The world is wonderful
neutral 0.8553068
toxic 0.12997608
severe_toxic 0.00089293375
obscene 0.0032995404
threat 0.0031727147
insult 0.001378159
identity_hate 0.00181871
result: The comment is neutral

what do you want to know?
neutral 0.833651
toxic 0.14483993
severe_toxic 0.00021733937
obscene 0.00079930364
threat 0.00089723465
insult 0.00035760368
identity_hate 0.0005163117

result: The comment is neutral

it is an absolute shit
neutral 0.00029329845
toxic 0.9997198
severe_toxic 0.00071540766
obscene 0.00088958396
threat 0.00091135374
insult 0.0021026104
identity_hate 0.00079175486
result: The comment is toxic