I spot a bot

Projekat iz predmeta Mašinsko učenje

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- Analiza
- Preprocesiranje
- Ucenje modela
- Rezultati

Preprocesiranje

- Podaci prikupljeni iz dataseta: „cresci-2015“ i „cresci-2017“
- Sadrže podatke o user-ima, njihovim tweet-ovima
- Niz transformacija:
  - 10 atributa
  - Podaci direktno iz dataseta
    - Followers count
    - Friends count
    - Favorites count
  - Izracunati podaci
    - Mentions per tweet
    - Urls per tweet
    - Hashtags per tweet
    - Retweets per tweet
    - Favorites per tweet
    - Frequency of tweets (in minutes)
    - Friends to followers ratio

- Ukupan broj user-a

```
In [29]: data.shape
Out[29]: (14533, 10)
```

- Raspodela klasa

```
print("Bots: {bot}\nHuman: {human}".format(bot = len(y[y == 1]), human = len(y[y == 0])))
```

```
Bots: 11821
Human: 2712
```

Učenje modela

- Logistička regresija
- Neuronska mreža sa propagacijom unapred

Logistička regresija

- Skup je podeljen na trening i test u razmeri 2:1
  - Trening skup je podeljen na trening i validacioni u razmeri 4:1
- Podaci su standardizovani pomoću StandardScaler objekta iz sclearn bibl
- Korišćena je L2 regularizacija
- Istreniran model:
  - LogisticRegression(C=1.1, class_weight='balanced', dual=False, fit_intercept=True, intercept_scaling=1, max_iter=100, multi_class='ovr', n_jobs=1, penalty='l2', random_state=None, solver='liblinear', tol=0.0001, verbose=0, warm_start=False)

- Rezultati „cross validation“ metode:

```
score
```

```
array([0.98762887, 0.99312242, 0.95870613, 0.98485891, 0.99242946,
       0.97040606, 0.87611838, 0.96971783, 0.96971783, 0.68203716])
```

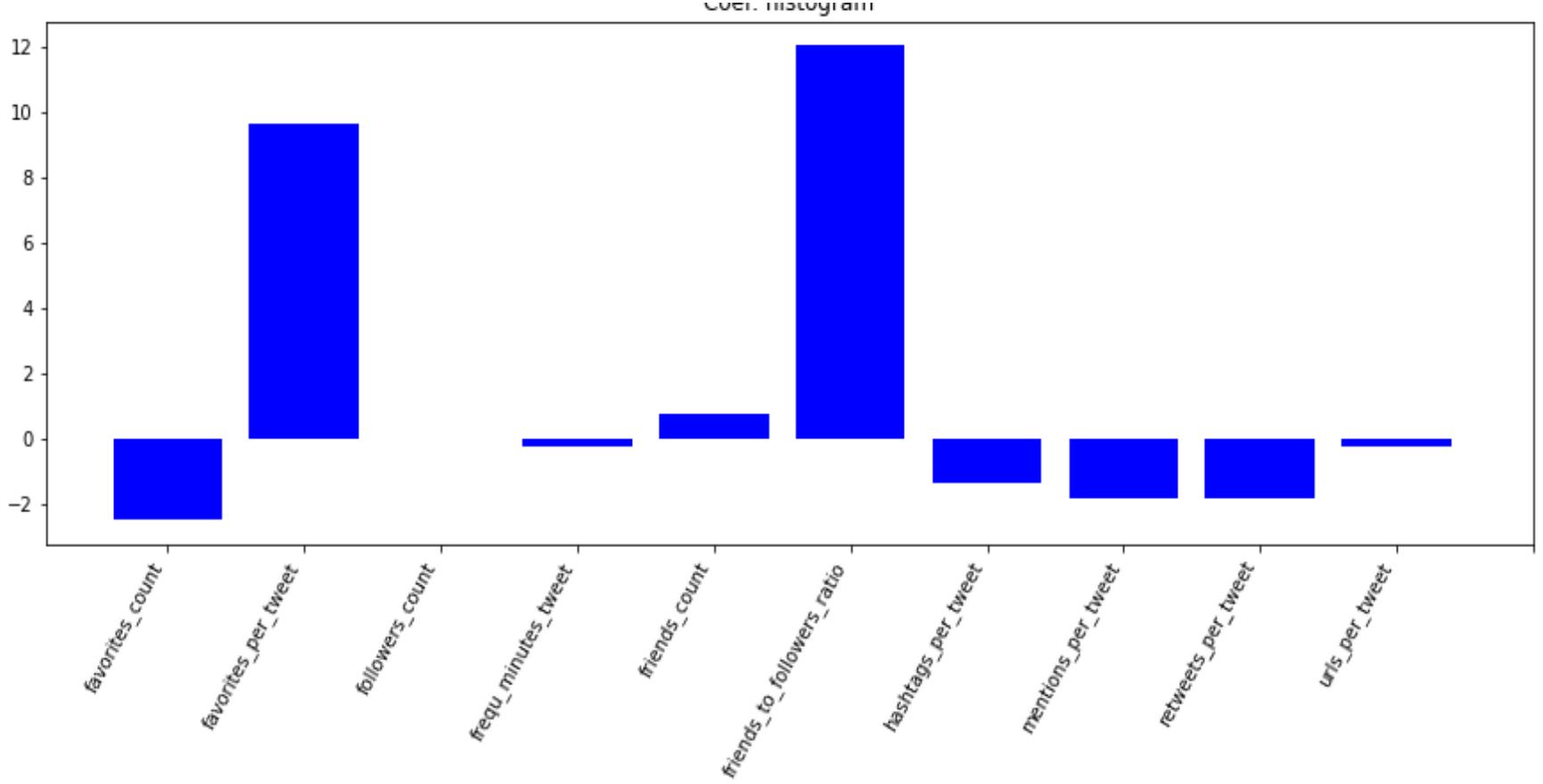
```
score.mean()
```

```
0.9384743028112273
```

```
score.std()
```

```
0.09137550271425189
```

Koeficijenti modela

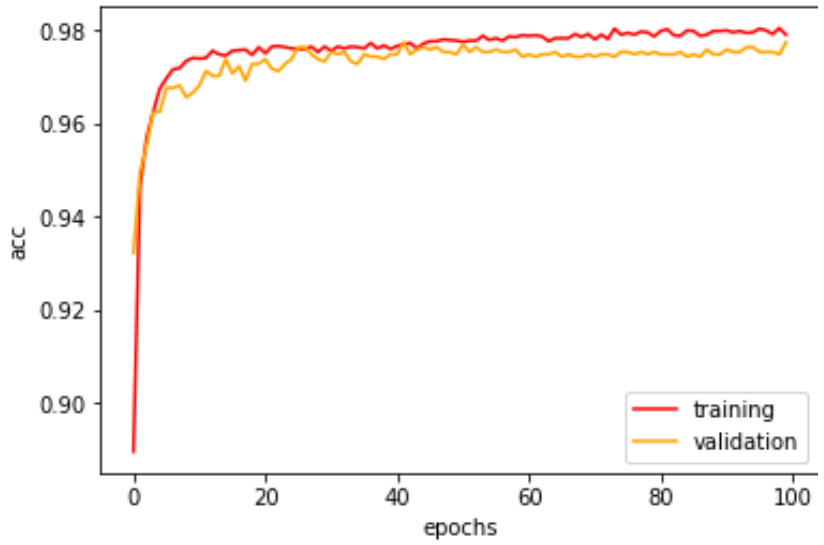


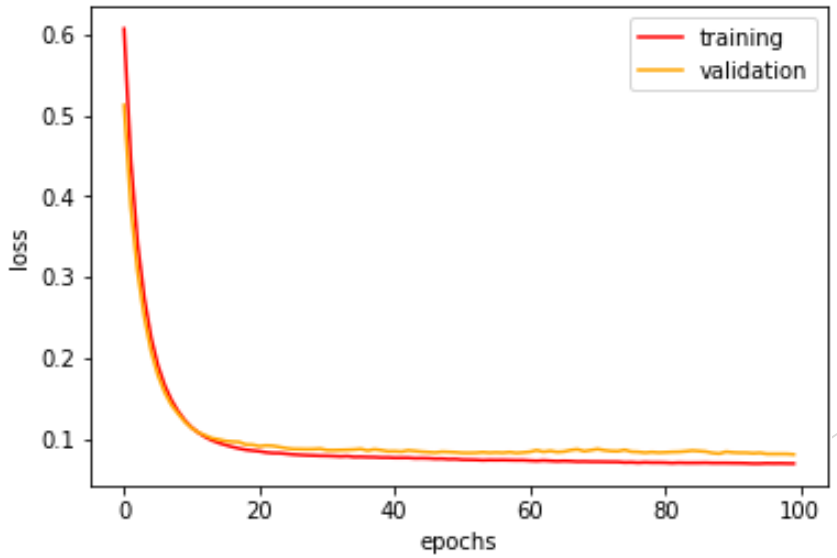
Neuronska mreža sa propagacijom unapred

- 2 skrivena sloja:
  - Sa 4 čvora
  - Sa 3 čvora
- Test loss: ~0.077
- Test accuracy: ~0.97

Layer (type)	Output Shape	Param #
dense_1 (Dense)	(None, 4)	44
dense_2 (Dense)	(None, 3)	15
dense_3 (Dense)	(None, 1)	4

Total params: 63
Trainable params: 63
Non-trainable params: 0





Hvala na paznji!