

Hate speech in news/media



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Data Incubator Interview
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Intro

The information/data era has its charm but also **challenges**

Lots of effort in:

- Fake news detection / factualness
- Toxicity detection on comments (obscenities, insults, treats, hate-speech) on social media

Motivation: un-hack democracies / prevent violence.



Our work: quantify speech features

NLP + deep learn the speech of news/media

After a little work:

(Torch (LSTM, GRU, Conv), Sklearn, Seaborn, Torchtext, Spicy (Stopwords, Stemming) Embeddings, Glove, Fasttext, CUDA, SageMaker, API, Lambda, hyperparam, Recall emphasis, Kaggle benchmark 97.7% (Leader 98.8 auc_roc), 4 data sets (200 K))

The problem/project definition is focusing on measuring the hate speech in news, and I already have the proof of concept results

- a) deliberate attack
- b) directed towards a specific group of people
- c) motivated by aspects of the group's identity.

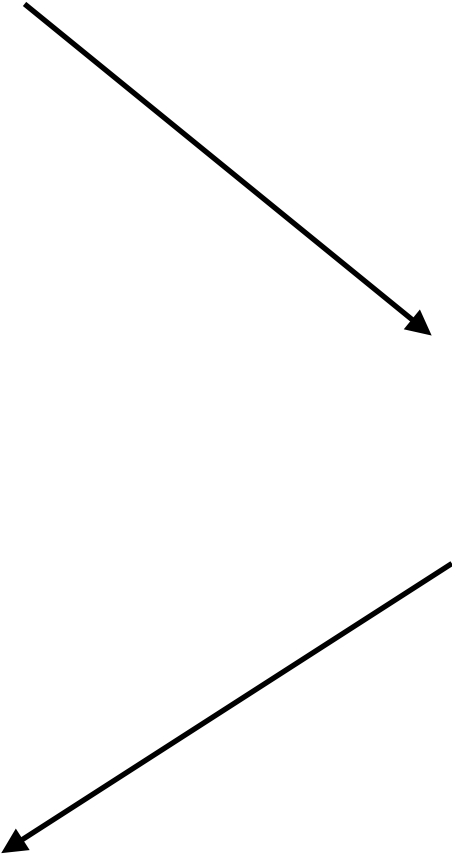
Project first application

Hate speech data sets:

- 150K Wikipedia comments
Jigsaw/Google toxic comments.
- 10K White supremacist forum
arXiv:1705.00648

Fake/True news:

12.8K Counts/Metadata on
True, mostly true, barely true,
half true, fake, pants on fire
arXiv:1705.00648



```
graph LR; A[Hate speech data sets] --> C[Torch (LSTM, GRU, Conv), Torchtext, Spicy (Stopwords, Stem) Embed (Glove, Fasttext) hyperpar, Recall Emphasis]; B[Fake/True news] --> C;
```

Torch (LSTM, GRU, Conv), Torchtext, Spicy (Stopwords, Stem)
Embed (Glove, Fasttext) hyperpar, Recall Emphasis

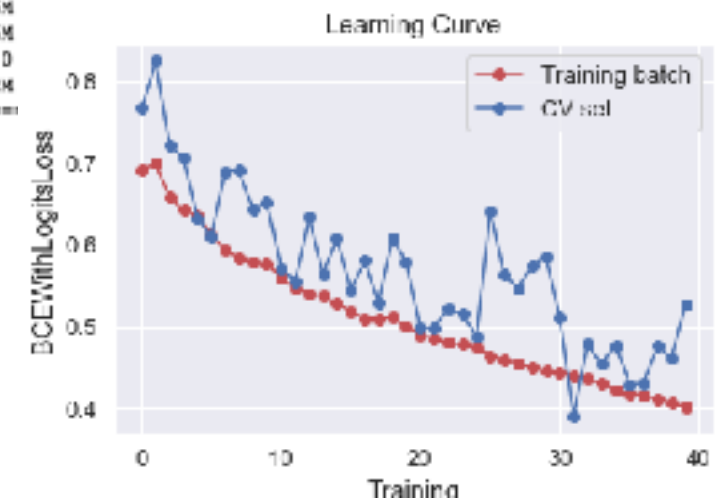
Pay back time!

Hate Speech Dataset from a White Supremacy Forum
<https://arxiv.org/pdf/1809.04444.pdf>

ACCURACY	RECALL	PRECISION	F1	ROC_AUC
0.839465	0.890971	0.803379	0.844911	0.921981

Layer	Kernel shape	Output shape	Params	Mult-Adds
0_embedding	[100, 20002]	[256, 191, 100]	2.0002M	2.0002M
1_conv.conv2d_0	[1, 100, 2, 100]	[256, 100, 130, 1]	20.1k	3.8M
2_conv.conv2d_1	[1, 100, 3, 100]	[256, 100, 139, 1]	30.1k	5.67M
3_conv.conv2d_2	[1, 100, 4, 100]	[256, 100, 138, 1]	40.1k	7.52M
4_conv.conv2d_3	[1, 100, 5, 100]	[256, 100, 137, 1]	50.1k	9.35M
5_conv.conv2d_4	[1, 100, 6, 100]	[256, 100, 136, 1]	60.1k	11.16M
6_dropout	-	[256, 500]	-	-
7_fc	[500, 6]	[256, 6]	3.005k	3.0k

Totals				
Total params	2.233796M			
Trainable params	2.233796M			
Non-trainable params	0.0			
Mult-Adds	39.5032M			

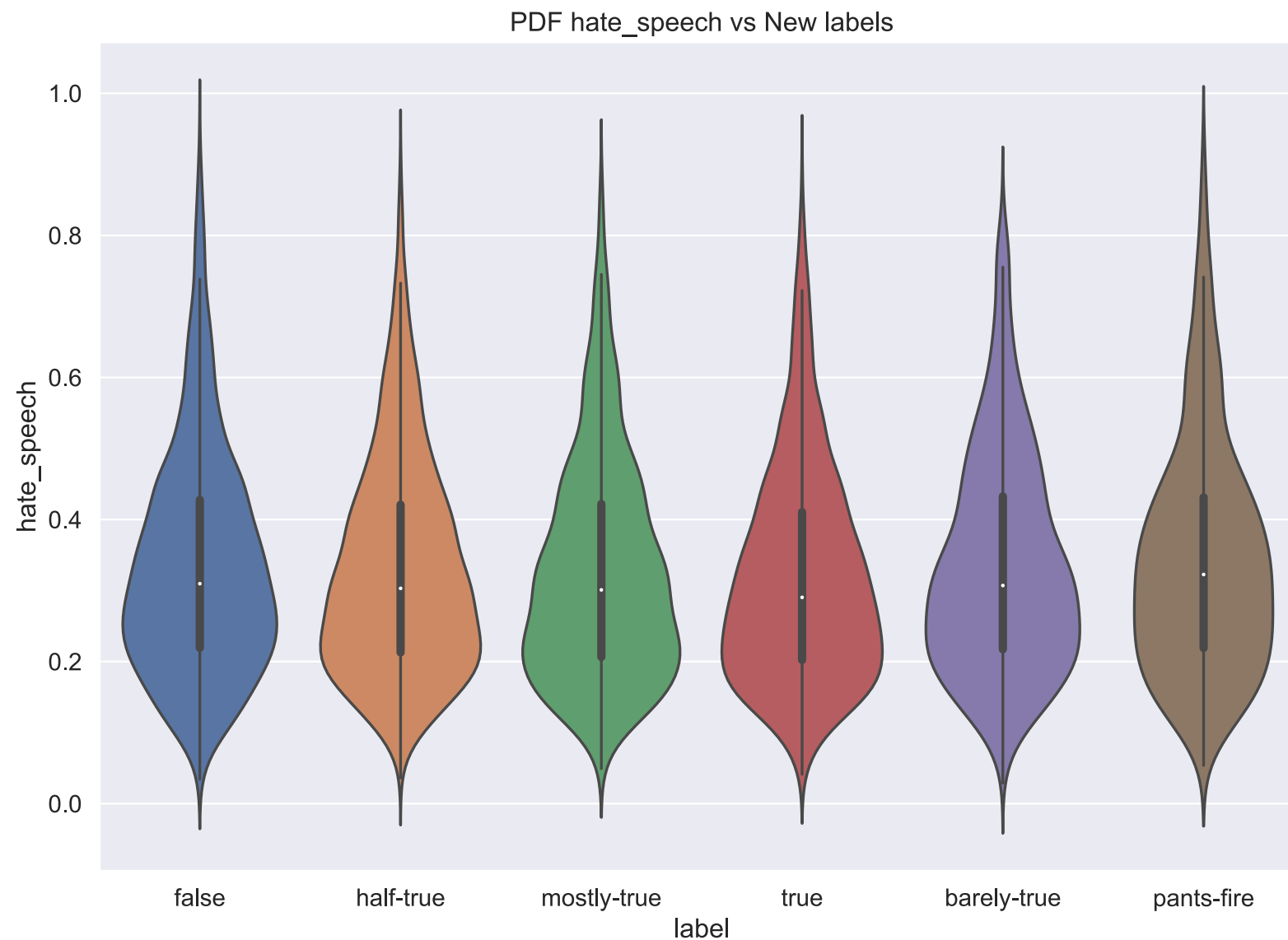


```
In [142]: quote = """When Mexico sends its people, they're
not sending their best. They're not sending you.
They're not sending you. They're sending people
that have lots of problems, and they're bringing
those problems with us. They're bringing drugs.
They're bringing crime. They're rapists. And some,
I assume, are good people."""
```

```
In [143]: custom_speech(model, quote)
```

```
Out[143]: 'Hate speech detected'
```

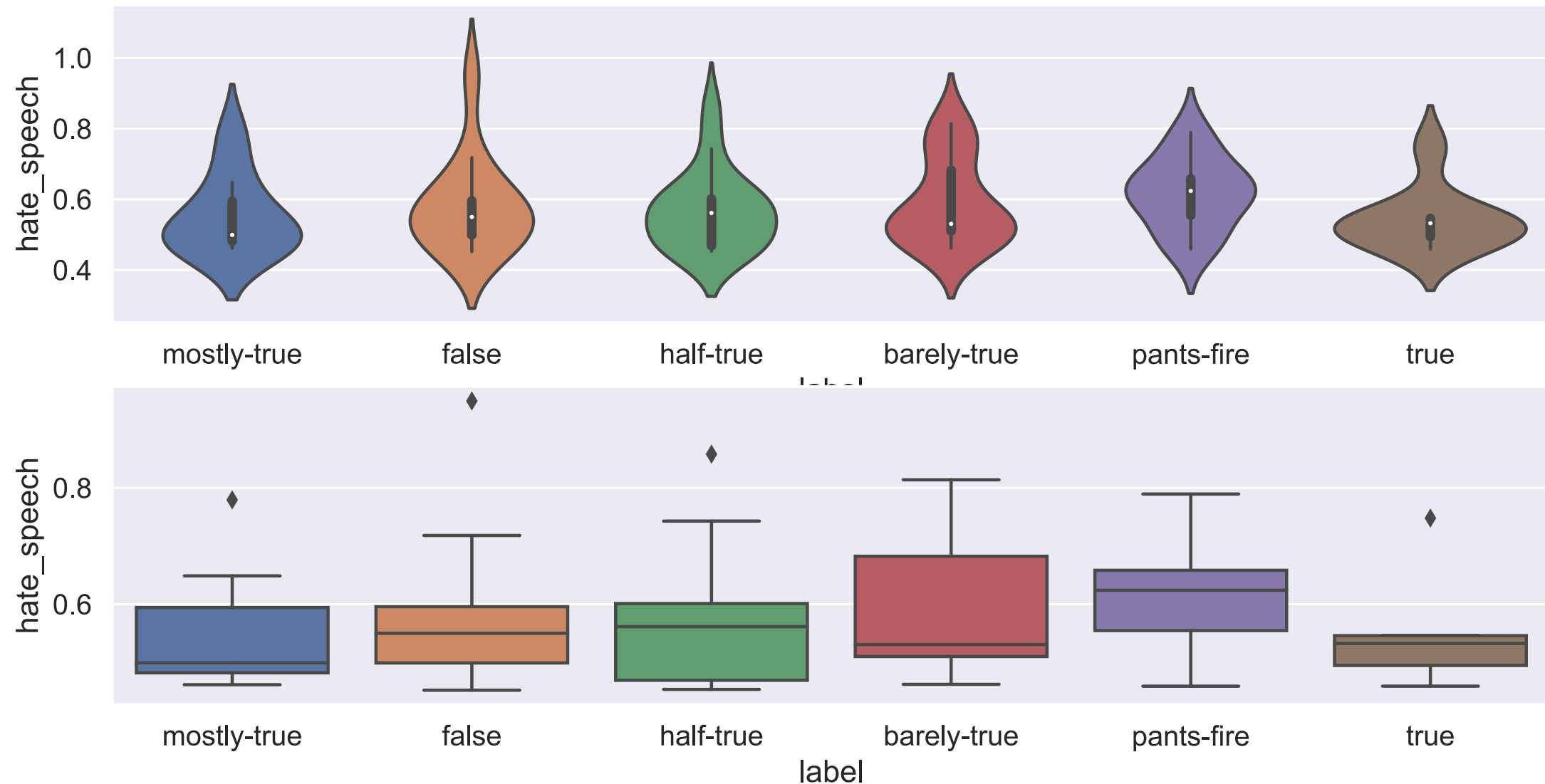
Easy... most news



Facebook is manly after the tails

Hate speech in fake news

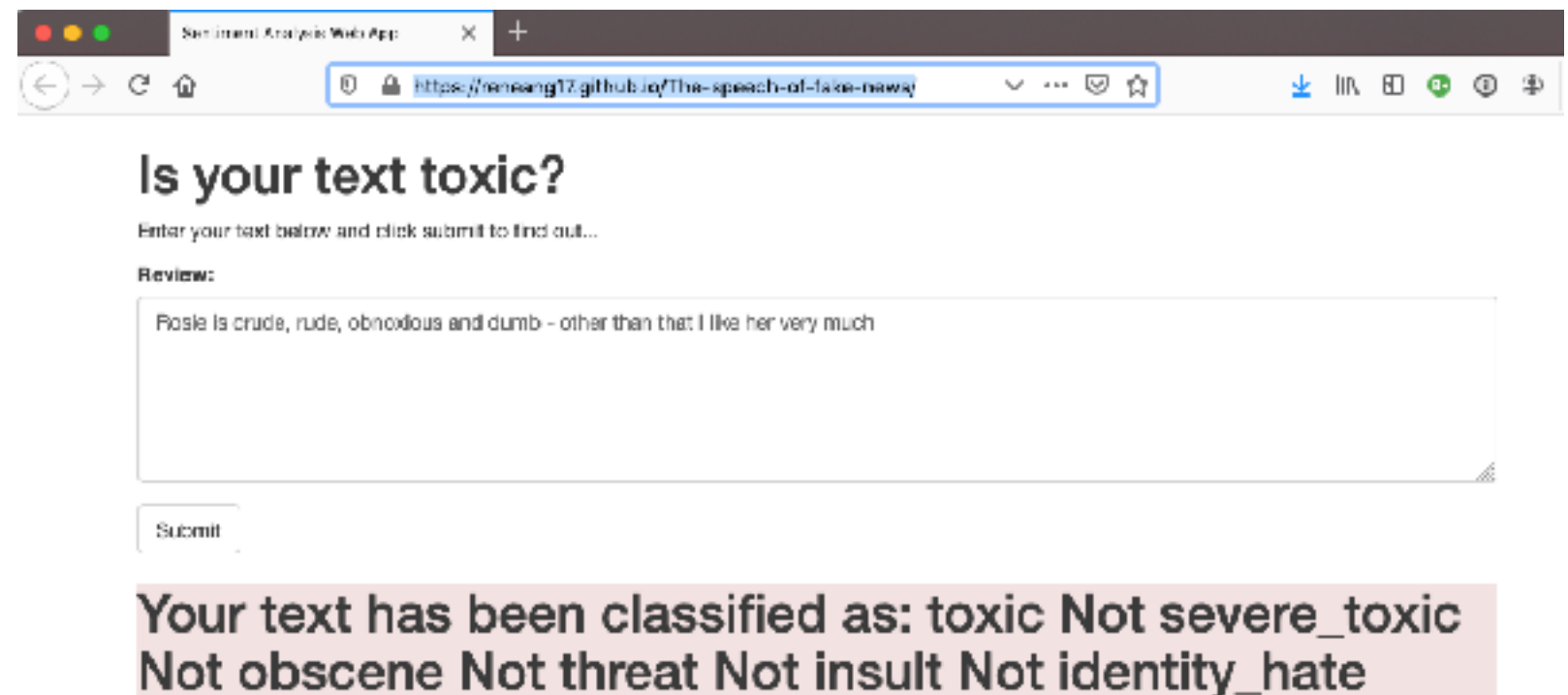
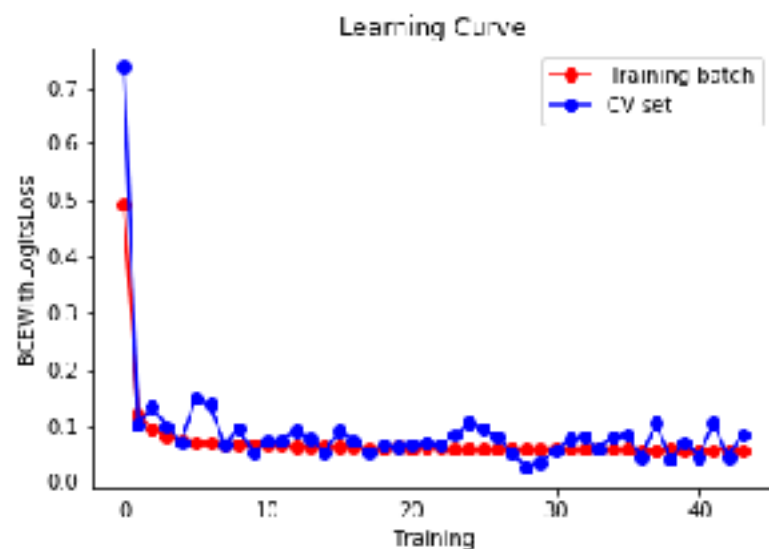
PDF of hate_speech > 0.45 vs Fake News labels



“Liar, Liar Pants on Fire”: A New Benchmark Dataset for Fake News Detection

Deployment

App that announces results. Determine whether a comment is toxic / obscene/ threat / identity-hate



[https://reneang17.github.io/
The-speech-of-fake-news/](https://reneang17.github.io/The-speech-of-fake-news/)

Side prod: Utils to use
TorchText with
SageMaker

References / Data sets

- “Liar, Liar Pants on Fire”: A New Benchmark Dataset for Fake News Detection
- Jigsaw/Google toxic comment classification challenge
- Hate Speech Dataset from a White Supremacy Forum
- Getting real about fake news
- Bag of tricks for efficient text classification