Toxic Comment Classification

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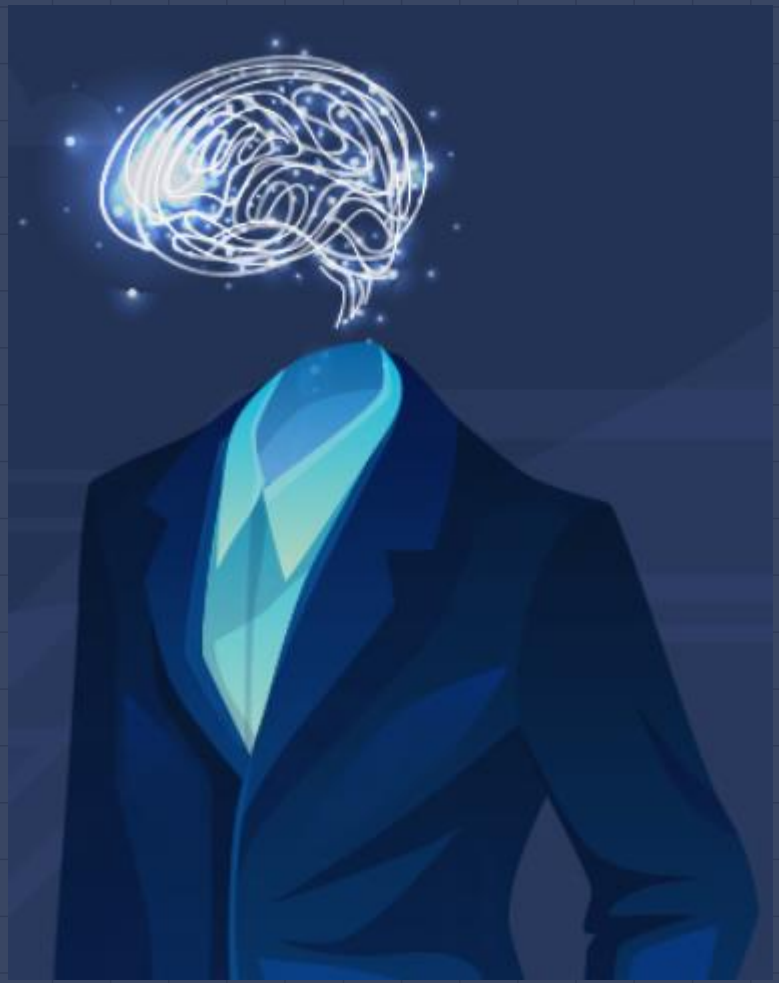
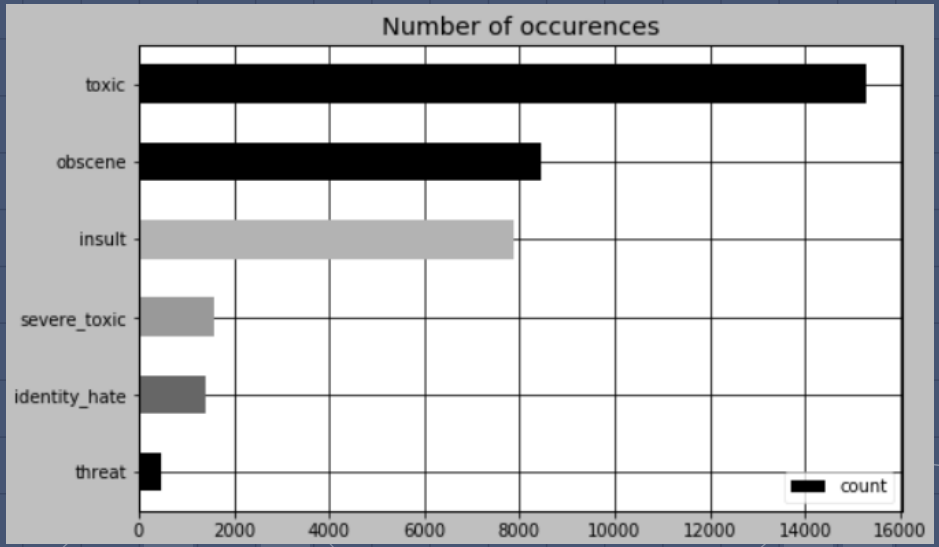
Can we improve online conversation through machine learning ?



The Data

- Toxic Comment Classification dataset on Kaggle
- 159,571 labeled comments from Wikipedia's talk page
- 63,978 comments for model testing
- Six Labels :
  - Toxic
  - Severely Toxic
  - Obscene
  - Identity Hate
  - Insult
  - Threat



Methodology: Deep Learning

- Keras Library
- Basic Neural Network
- Convolutional Neural Network
- Recurrent Neural Network

Test Data Performance

95.34% Accuracy - 11.55% Loss

Simple Neural Network

96.50% Accuracy - 8.78% Loss

Convolutional Neural Network

96.68% Accuracy - 8.23% Loss

Recurrent Neural Network

Recommendations:

Best Practice

- Recurrent Neural Networks are best suited for speech analysis

More Data

- NLP models require lots of data, increasing training data can have significant effect.

Regulate

- Ban utilization of words most often associated with toxic comments

Future Work:

Train Longer

- Training for more epochs will improve the performance but requires significant computational power

Try Using Pre-Trained models

- Pre trained models might be able to improve performance without requiring much computational power

Deploy on AWS

- This model can live on AWS in a very cost-efficient way and generate an alert everytime a certain type of comment (ex: threat) is detected

THANKS!

Any questions?

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