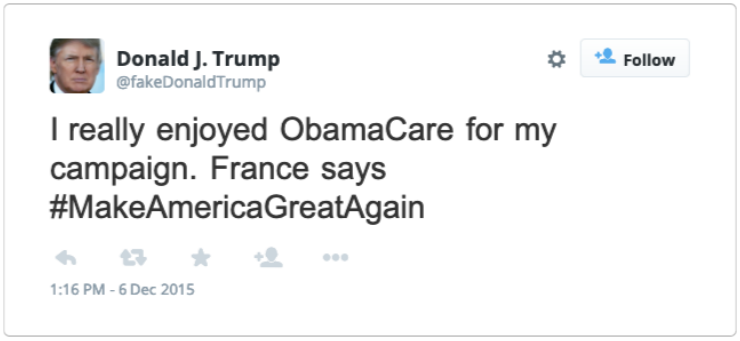
ART AND MACHINE LEARNING
CMU 2019 SPRING
**PROJECT 3**

**Social Media**

Github: https://github.com/claireyuan/ArtML-project-3

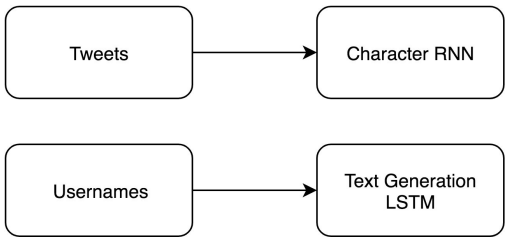



Claire Yuan (chenxiy), Caroline Wu (czw)

**Concept**:
Our president, Donald Trump, is known for his outspokenness on Twitter. We hoped to use ML text generation as a modelling exercise to see what his typical tweet profile is like. It would also be interesting to see if AI text generation is good enough at copying a person's style that its output is indistinguishable from the real thing.

People project their identity and style to the Internet through their usernames. Usernames allow them to establish online presence and brand while remaining anonymous. We thought it would be interesting to generate usernames and imagine what persona someone attempts to project with each generated username.

**Technique**:




*Character RNN*
We modified the Pytorch word-level language modeling example [1] to handle characters instead of words. Then we trained with GRU and LSTM on twitter datasets.

*Text generation LSTM*
We modified the example text generation LSTM [2] and trained with 100,000 Reddit usernames [3]. We experimented with varying temperature and maximum character sequence length.

**Process**:
We ran many trials with the twitter character-level RNN on different datasets. Some, like the Elon Musk examples [4], had too little data and we were unable to get good results despite attempts to tune hyperparameters. Most of the output was garbage but we did get some ramblings about Tesla. We were able to find a large dataset of Donald Trump tweets [5] and this was able to produce some good results. Although the model seems to have overfitted, that is not a bad thing for our task of generating coherent phrases.

We also tried generating usernames with the character-level RNN. Since the model trained very slowly, we were not able to train for many epochs. Therefore, the model ended up generating long strings of gibberish, such as "eFSnznzeS44p," so we decided to move to a text generation LSTM. After experimenting with maximum character sequence length to input, the text generation LSTM generated much more coherent usernames.

**Results**:
For usernames, here are some notable ones we generated:

- TheRealManMaster
- amusedfathat
- PM_ME_YOUR_MIANPRE
- The_ActualNightBoyDee93

Many results included included the terms “throwaway”, “Bob”, as well as some swear words.

The twitter results contained many instances of #Trump2016 and #MakeAmericaGreatAgain. They also contained references to “Crooked Hillary”, “lyin’ Ted Cruz”, and “Goofy Elizabeth Warren”. Here are some highlights:


**Reflection**:
The final tweets were selected for their coherence and uniqueness. Many of the generated tweets had poor grammar, misspelled words, or were direct copies of actual tweets. Our final results came from a model that had already overfitted, so maybe in the future we will not train as long or make sure we have enough data. The final usernames were selected based on appropriateness and comedic value. We think that we could have improved the username results by filtering the training data so that it did not contain undesirable words such as “throwaway” or swear words. Overall this project helped us become more familiar with text generation using RNNs, which will be helpful for our final project, which is also text-based.

**Reference**:
[1] https://github.com/pytorch/examples/tree/master/word_language_model
[2] https://github.com/kangeunsu/ArtML/tree/master/text-generation-LSTM
[3] ColinMorris. (2017, December 08). Reddit Usernames. Retrieved from https://www.kaggle.com/colinmorris/reddit-usernames
[4] AdamHelsinger. Elon Musk Tweets-Until 4/6/17. https://data.world/adamhelsinger/elon-musk-tweets-until-4-6-17
[5] LovesData. Trump Tweets, 5/4/09 - 12/5/16. https://data.world/lovesdata/trump-tweets-5-4-09-12-5-16