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## #InTheKnow

Examination into “fake news” detection, in the context of football transfer twitter content, using supervised machine learning approaches.

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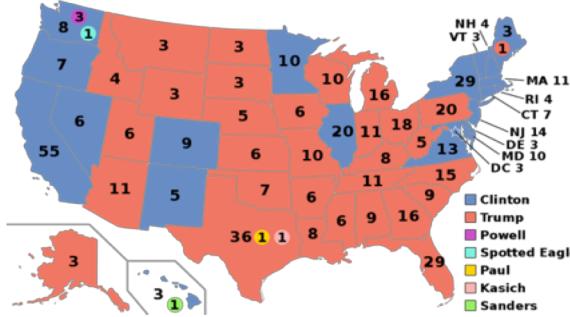
Date 09/04/19

# Overview

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- Background
- Motivation
- Design
- Implementation
- Implementation Issues
- Evaluation
- Conclusions

# Background



- Polarising fake news posts used to take advantage of social media ranking algorithms.
- Individuals with no interest in election outcome influenced for personal financial gain.



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**What does this have to do with  
football transfer rumours ?**

# Motivation

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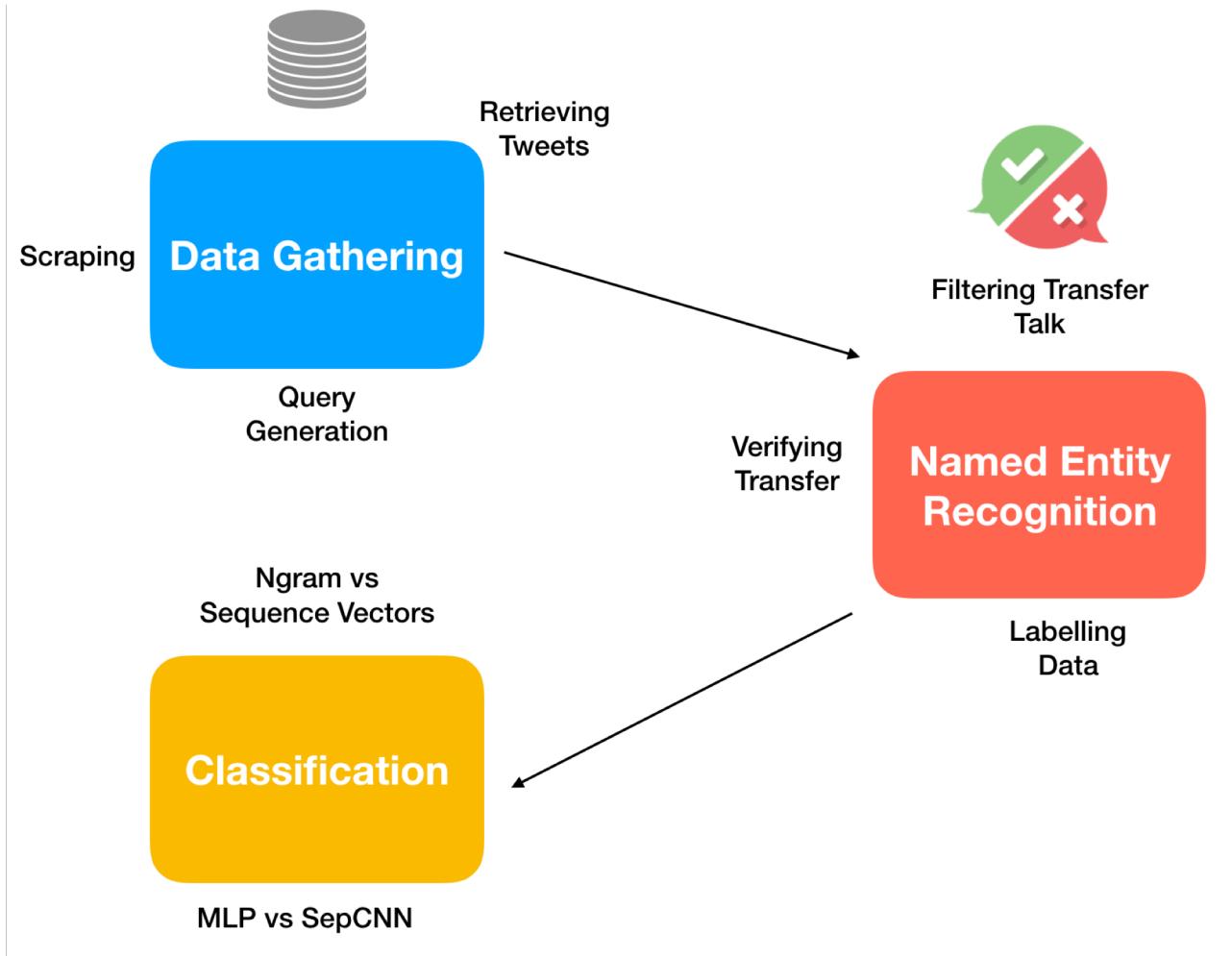
- Fake news code of conduct vague, no automated approach suggested.
- Football transfer rumour speculation on Twitter has been prevalent for years.
- Fake news tactics used in US Election have been used in this space.
- Sensationalised headlines, statements used to misinform and re-direct user.

# Motivation

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**Research Question:** “To what extent can supervised machine learning approaches be used to predict the accuracy of a Tweet or Twitter account, in relation to a football transfer?”

# Design



# Implementation

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- Data gathering done using scraping and Twitter API “work around”.
- Labelling done using custom scripts which used NER and cross referenced with confirmed transfers of that window.
- Two different approaches to classification.

# Implementation

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## Classification approach A: (Bag of words)

- Represented tweets texts as n-grams. Simple MLP architecture for model.
- Easy to train, effective.
- Discards important information like word ordering, semantics, grammar.

# Implementation

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Classification approach B:

- Separated CNN architecture.
- Aim to take advantage of semantically similar words using word embeddings.
- Take into account sequences of words.

# Implementation Issues

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- Labelling implementation, correctly labelling. Blurry line drawn between “true” and “rumour”.
- Overfitting: Small vocabulary of transfer talk from tweets gathered. Lot of retweets. Learned player club relationships.

# Evaluation

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- Approach A
  - Simple model showed less overfitting.
  - High accuracy scores in testing ( $\approx 0.80$ ) and significantly lower loss than other architectures.
- Approach B
  - Vocabulary size not big enough to take advantage of word embeddings.
  - Varying model architectures showed poor accuracy scores  $\approx 0.5$

# Conclusions

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- Simple approach more suited to test case.
- Different test set with larger vocabulary suited to more complex approach.
- Future work:
  - Blank entity name: “Arsenal X makes bid for Karim Benzema Y”
  - Same approach on different corpus.



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# Questions ?



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# Thank You