FakeNewsTracker: A Tool for Fake News Collection, Detection, and Visualization

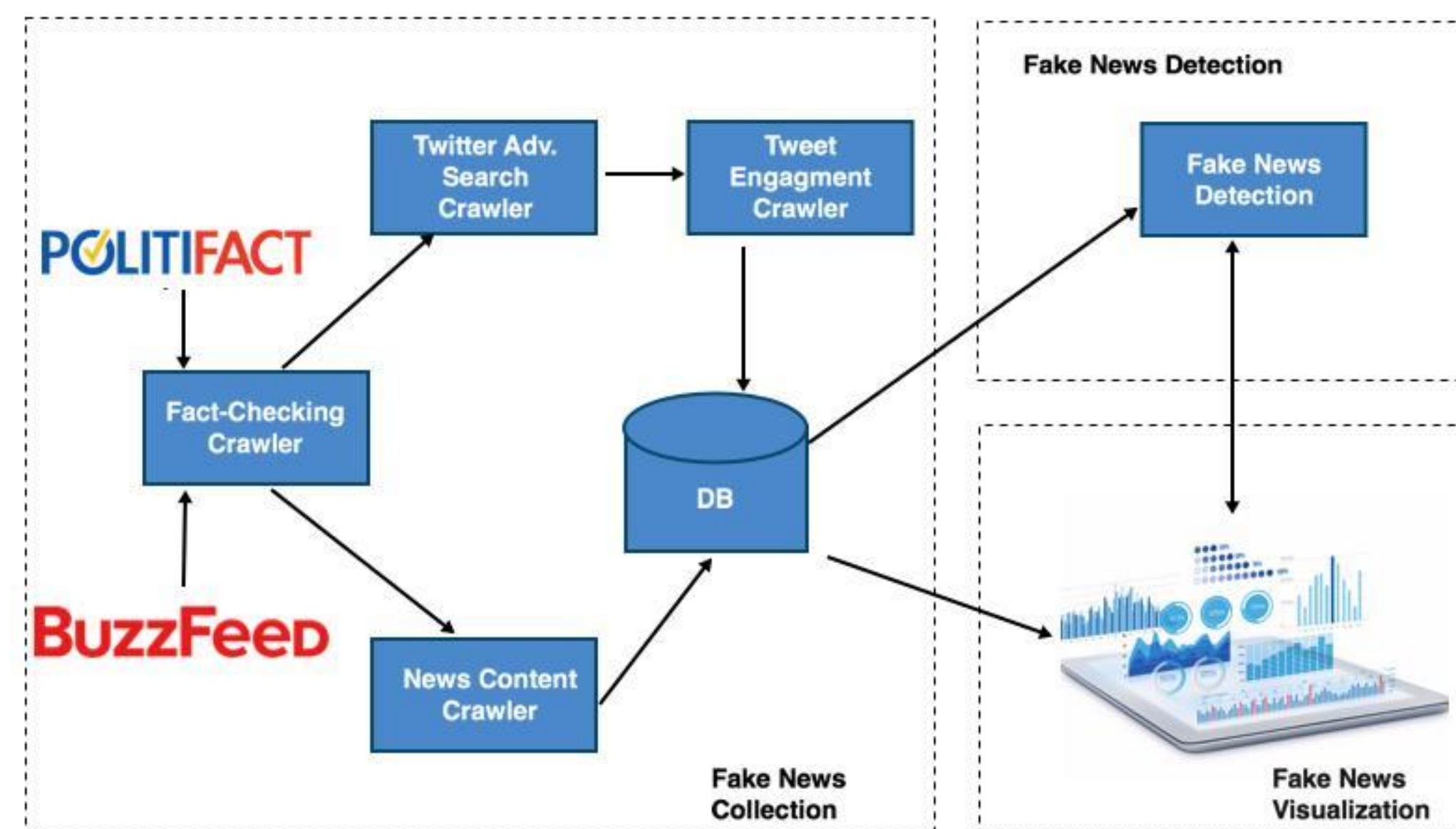Kai Shu, Deepak Mahudeswaran, and Huan Liu

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Introduction

- Fake news problem is important because of its social impacts and adverse effects.
- Detecting fake news in social media is challenging
  - Inadequate data with ground truth labels
  - Topics of fake news change dynamically

FakeNewsTracker

- **Contributions**:
  - An end-to-end framework for the fake news collection, detection and visualization
  - An ability to collect fake news pieces in streaming manner
  - A detection mechanism using temporal social engagements and news content

Fake News Detection - Social Article Fusion

- Detecting fake news with fusion of news content and social context
  - Extract news representation using Autoencoder
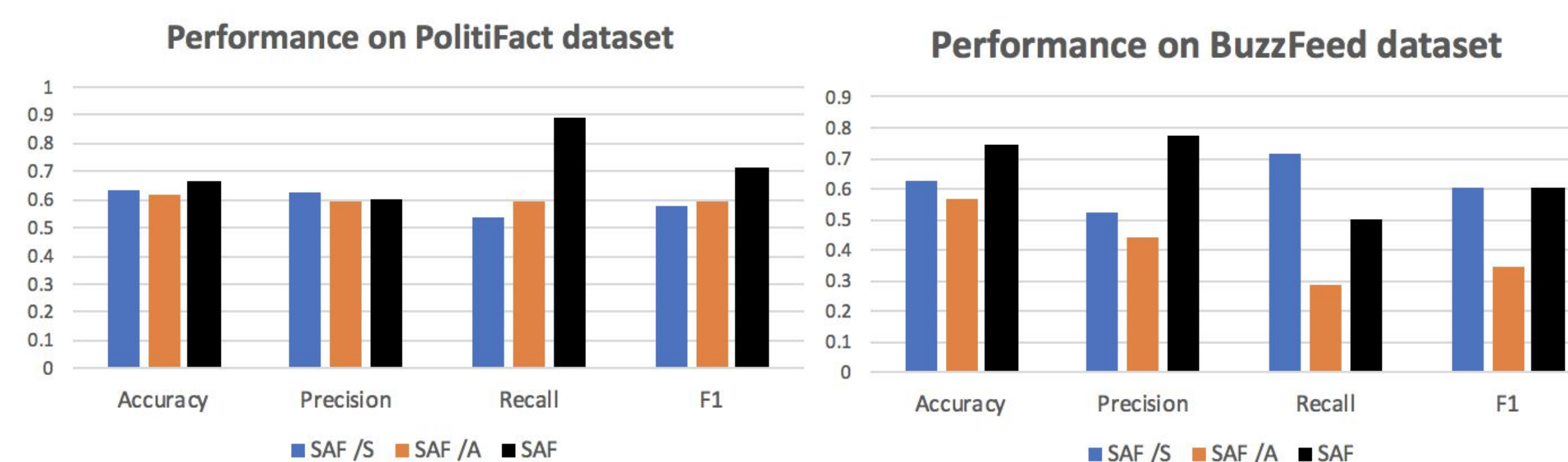 - Learn temporal social engagements using RNNs
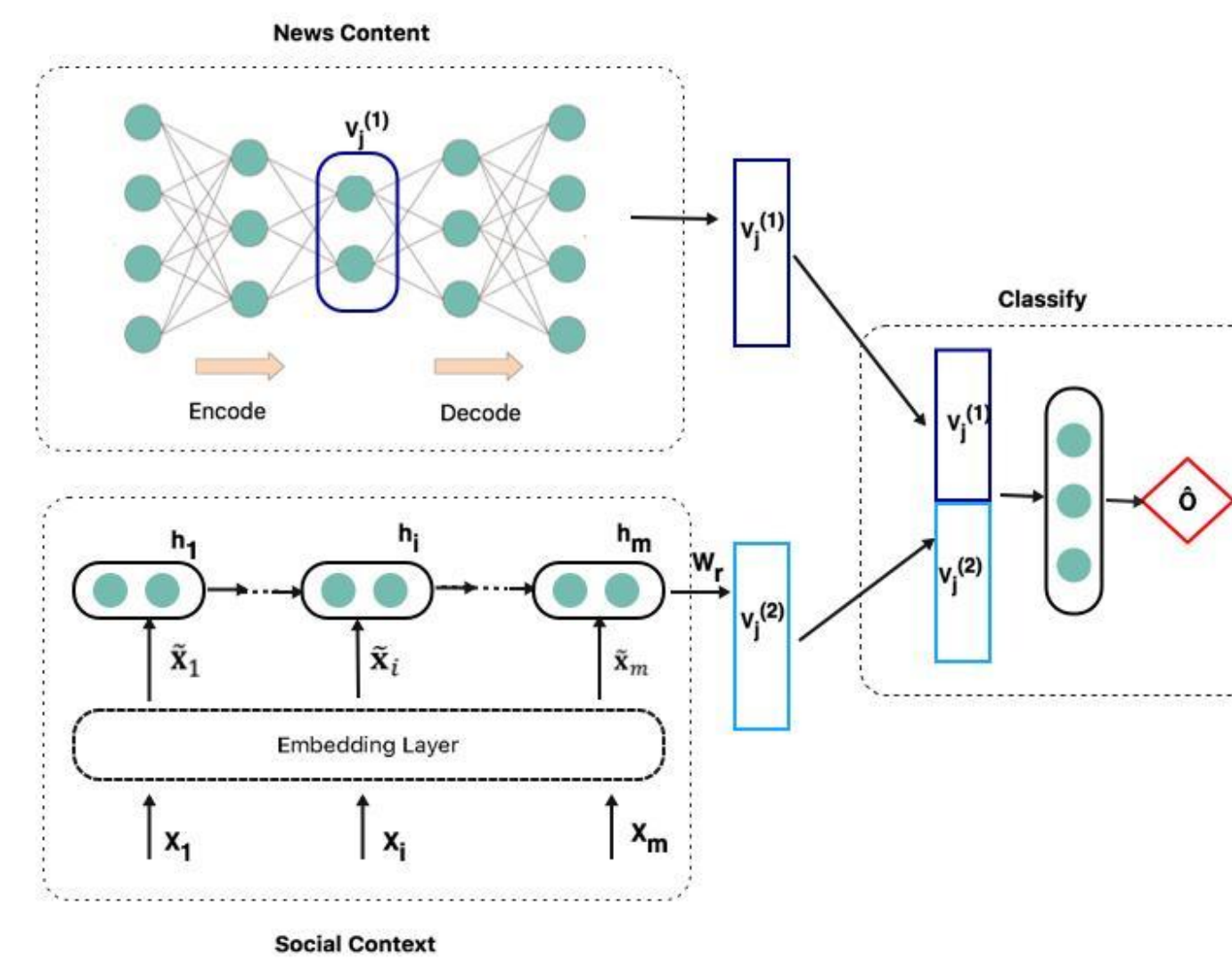
  - Jointly optimizing the outputs of both networks

$$Loss = \mathcal{L}_{pred} + \mathcal{L}_{AE} + \sum_{i=1}^{n} V_i^2$$
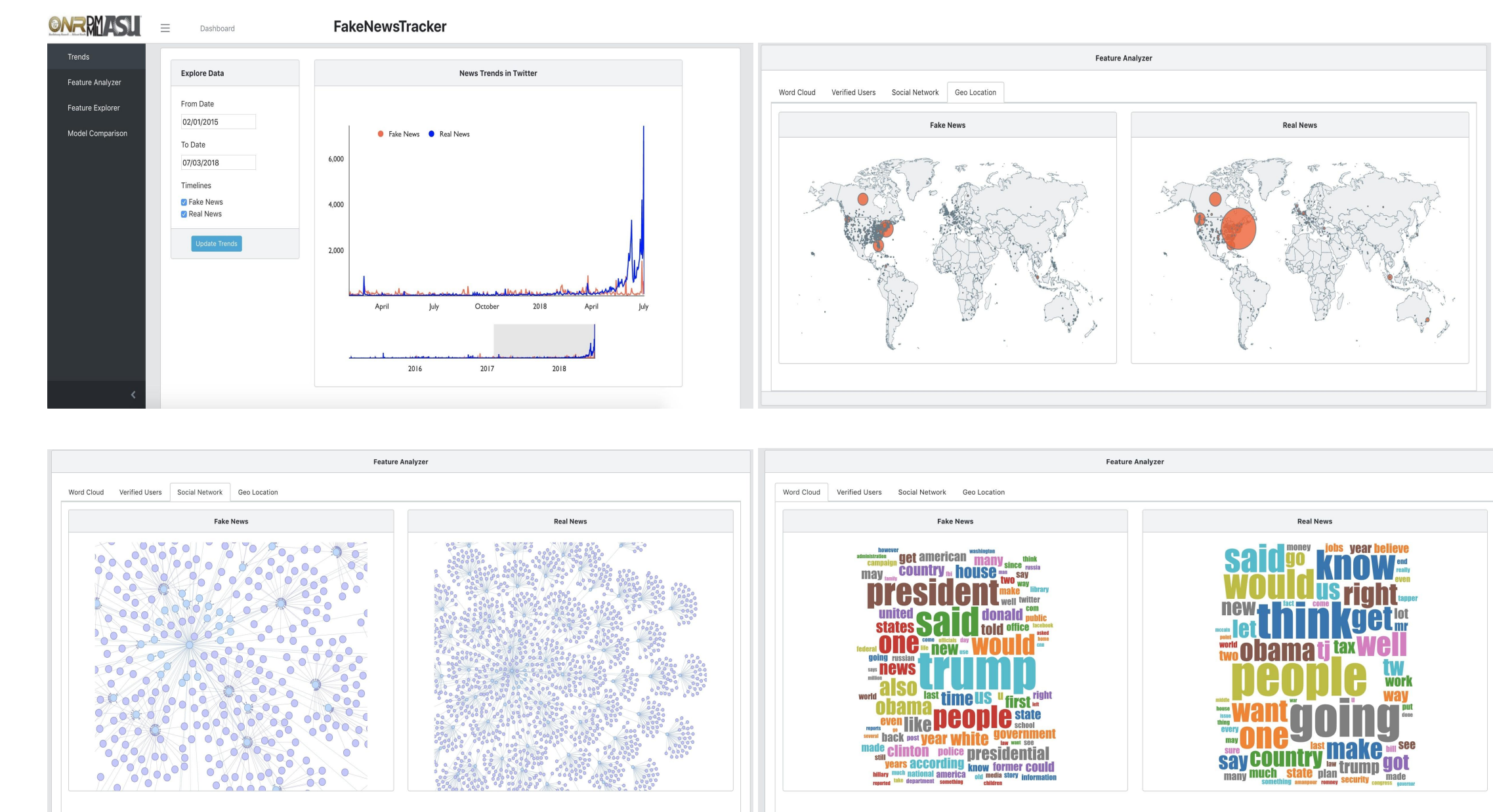
Experimental Results

- The proposed model performs better when both news content and social engagements are used

Visualization

- Web interface for tweet and feature visualization
  - Data Exploration including trends, geo-location, social network and topics
  - Visualizations to compare the feature significance and model performance

Future Work

- Extend FakeNewsTracker to establish a Fake-News Repository
- Extend FakeNewsTracker to collect data from different sources or platforms

Data Mining and Machine Learning Lab

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