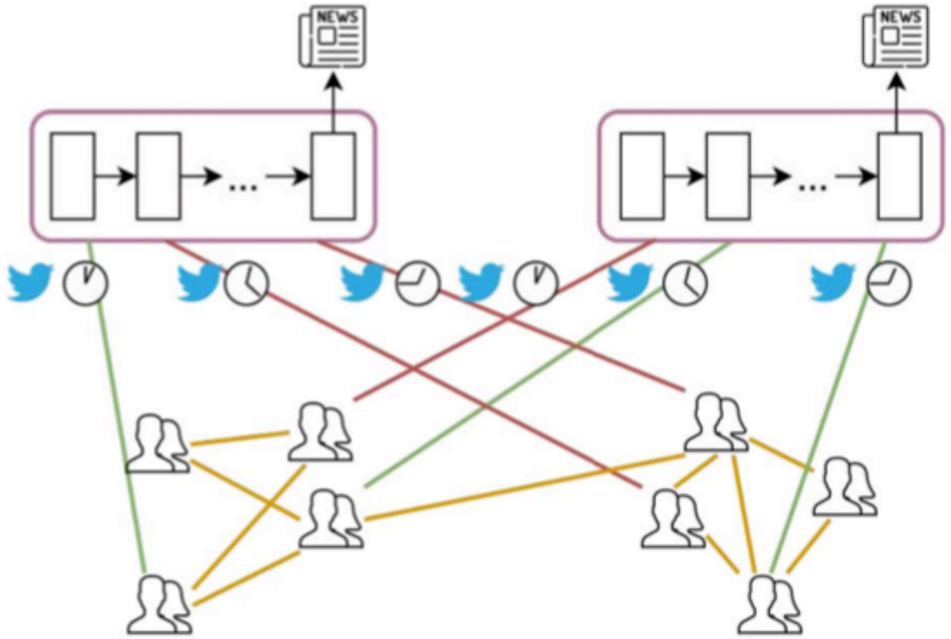
Methodology

Temporal Engagement Aggregator

- Use Bi-LSTM as aggregator model, with user representation, timestamp, engagement stance as inputs
- On the top of Bi-LSTM, further incorporate an attention mechanism to better encode long series of engagements.
- Attention is not only expect to improve the model quality but also its explainability.



Methodology

FANG - Unsupervised Proximity Loss

- Derive the Proximity Loss from the hypothesis that closely connected social entities often behave similarly.
  - motivated by the echo chamber phenomenon
- Within each sub-graph G' (news source & users), loss function:
- $$\mathscr{L}_{\text{prox}} = -\sum_{u \in G'} \left[\sum_{r_p \in P_r} \log\left(\sigma\left(z_r^\top z_{r_p}\right)\right) + Q \cdot \sum_{r_n \in N_r} \log\left(\sigma\left(-z_r^\top z_{r_n}\right)\right) \right]$$
  - Minimizing the distances between neighboring (positive) nodes
  - Maximizing the distances between remote (negative) nodes