Preliminaries

Notation

- $C = \{c_1, c_2, \cdots, c_m\}$: rumor detection dataset, m: num of events
  - $c_i = \{r_i, w_1^i, w_2^i, \cdots, w_{n_i-1}^i, G_i\}$: i-th event, n_i: num of posts in c_i
    - r_i: source post (root node)
    - w_j^i: j-th relevant responsive post
    - $G_i \rightarrow \langle V_i, E_i \rangle$: propagation structure
      - $V_i = \{r_i, w_1^i, \cdots, w_{n_i-1}^i\}$
      - $E_i = \{e_{st}^i \mid s, t = 0, \cdots, n_i - 1\}$, i.e., $w_1^i \rightarrow w_2^i$: e_{12}^i, $r_i \rightarrow w_1^i$: e_{01}^i

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- $\mathbf{A}_i \in \{0,1\}^{n_i \times n_i}$: adjacency matrix where
  - $a_{ts}^i = \begin{cases} 1, & \text{if } e_{st}^i \in E_i \\ 0, & \text{otherwise} \end{cases}$
- $\mathbf{X}_i = \left[\mathbf{x}_0^{i\top}, \mathbf{x}_1^{i\top}, \ldots, \mathbf{x}_{n_i-1}^{i\top}\right]^\top$: feature matrix extracted from c_i
  - $\mathbf{x}_0^i$: feature vector of r_i
  - $\mathbf{x}_j^i$: feature vector of w_j^i