Predicting Terror Attacks
A Data Story

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Introduction

Exploring the Data

Terrorist Relationships as a Social Network

Predicting Terror Attacks

A First Unsuccessful Attempt: Setup

- $\mathcal{G}_t =$ graph of terror attacks at time t
- Let $\mathbf{attach}_t$ be a vector such that

$$\mathbf{attach}_t(i) = \begin{cases} 1 & \text{if node added at } t+1 \text{ links to node } i \\ 0 & \text{otherwise} \end{cases} \tag{1}$$

- Idea: $\mathbf{attach}_t$ smooth $\Rightarrow$ terror attack location can be explained by graph topology

A First Unsuccessful Attempt: Result

- Graph nodes: terror attack locations (1293 nodes)
- Graph edges: weight based on proximity of features vector (835'278 edges)
- Complete graph

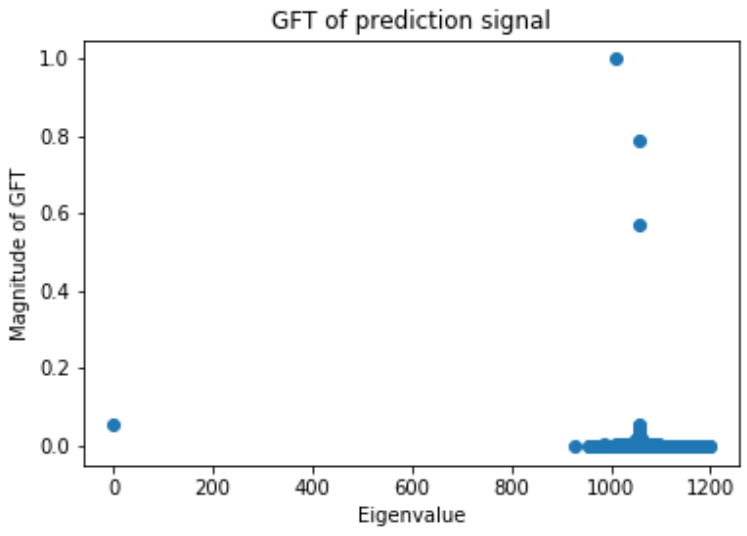

Figure: GFT of **attach**$_{t=1282}$

Predicting Terror Attack Locations: Setup

1. From the dataset, select the 10 biggest connected components
2. Sort the dataset by date of terror attack.
3. Hence component $\Leftrightarrow$ location
4. For each node, select lead node l that maximises sum of weights to other nodes
5. Find the lead node $l^\star$ that is the most strongly linked to the new node (i.e. the next terror attack).
6. Prediction: next location is location of $l^\star$

Predicting Terror Attack Locations: Results

Accuracy slightly over 50%

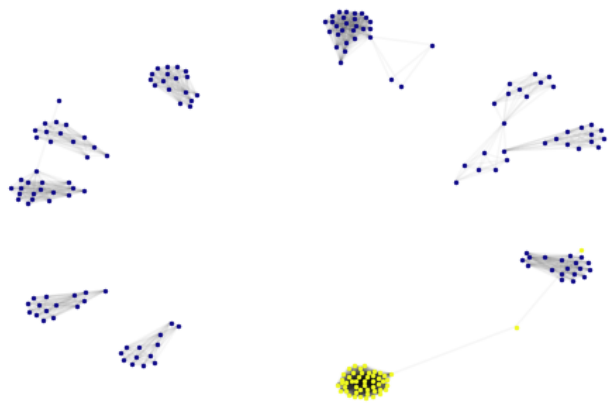

Figure: Prediction animation (yellow: correct)