SpacePhaser: Phase Space Embedding Visual Analytics

Presenter

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PhD Students
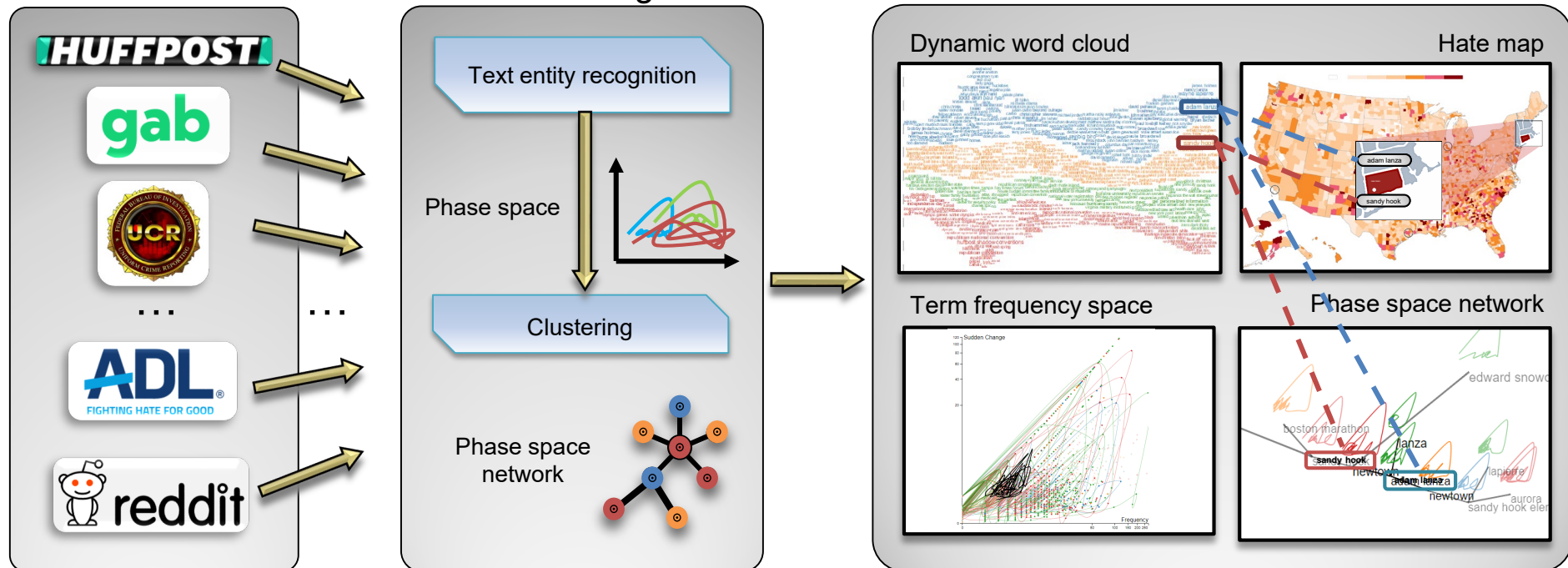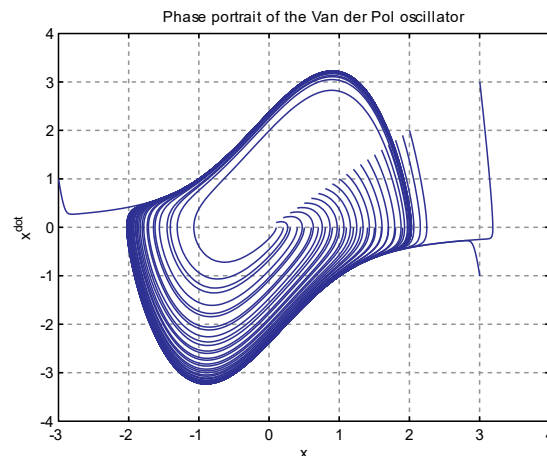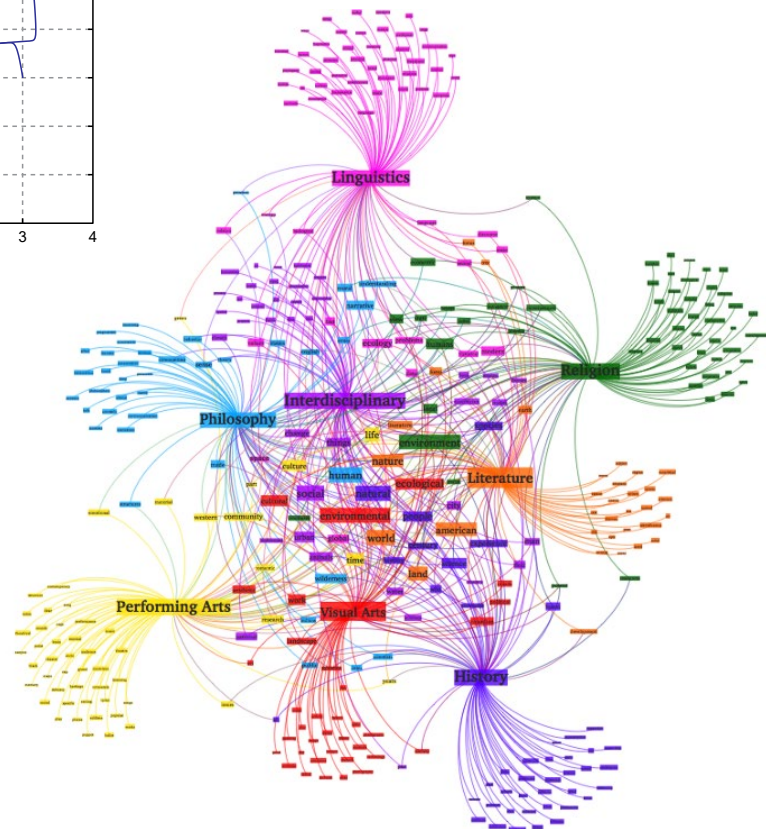
- Ngan V. T. Nguyen

iDVL interactive Data Visualization Lab

Outline

1. Introduction

2. Background and related work

3. User Interface and interaction

4. Case study

5. Conclusion and Future work

Introduction

(1) Data collecting and cleaning

(2) Data processing and mining

Text entity recognition

Phase space

Clustering

Phase space network

(3) Data visualization

Dynamic word cloud

Hate map

Term frequency space

Phase space network

Related work

Phase Space

Text Visualizations

Topic modeling

User Interface

Dynamic word cloud

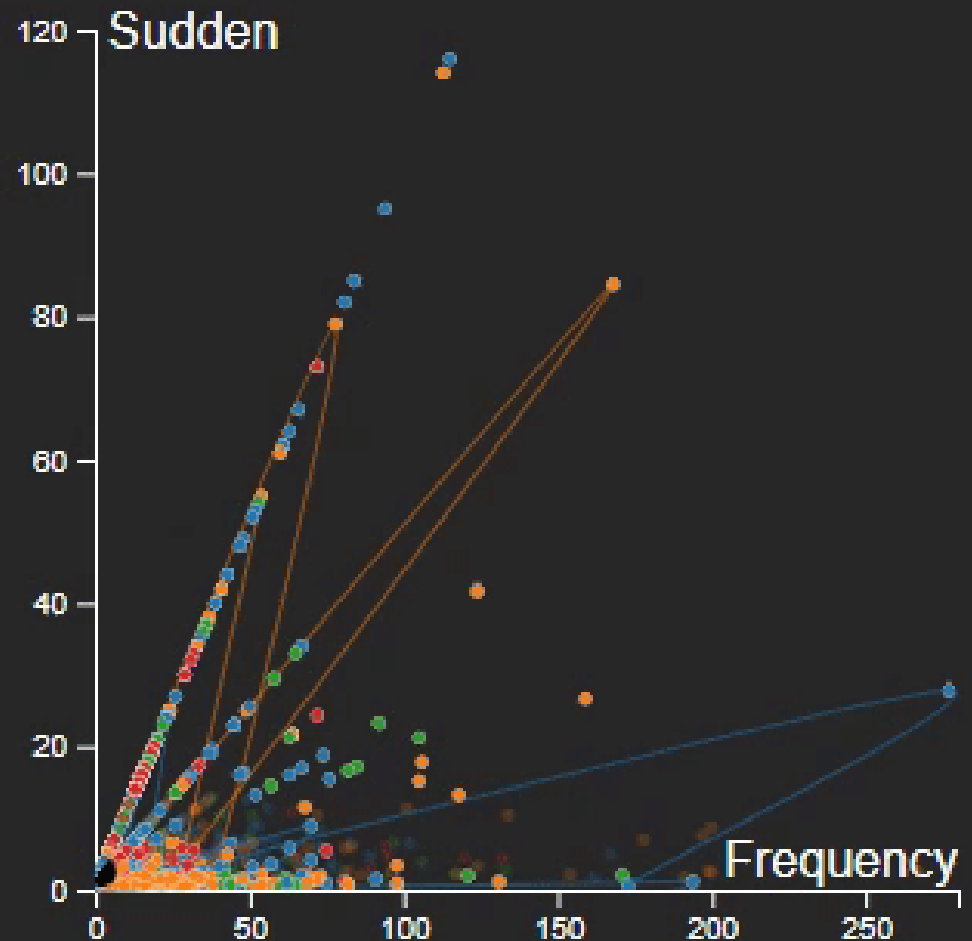Phase Space graph   Phase space network

User interactions

Mouse hover:

- Highlight term and related terms (similar with phase space network).

- Mark highest topic attention time line

Mouse hover:

- Display trajectory of term over time

- This feature link with other

  visualization

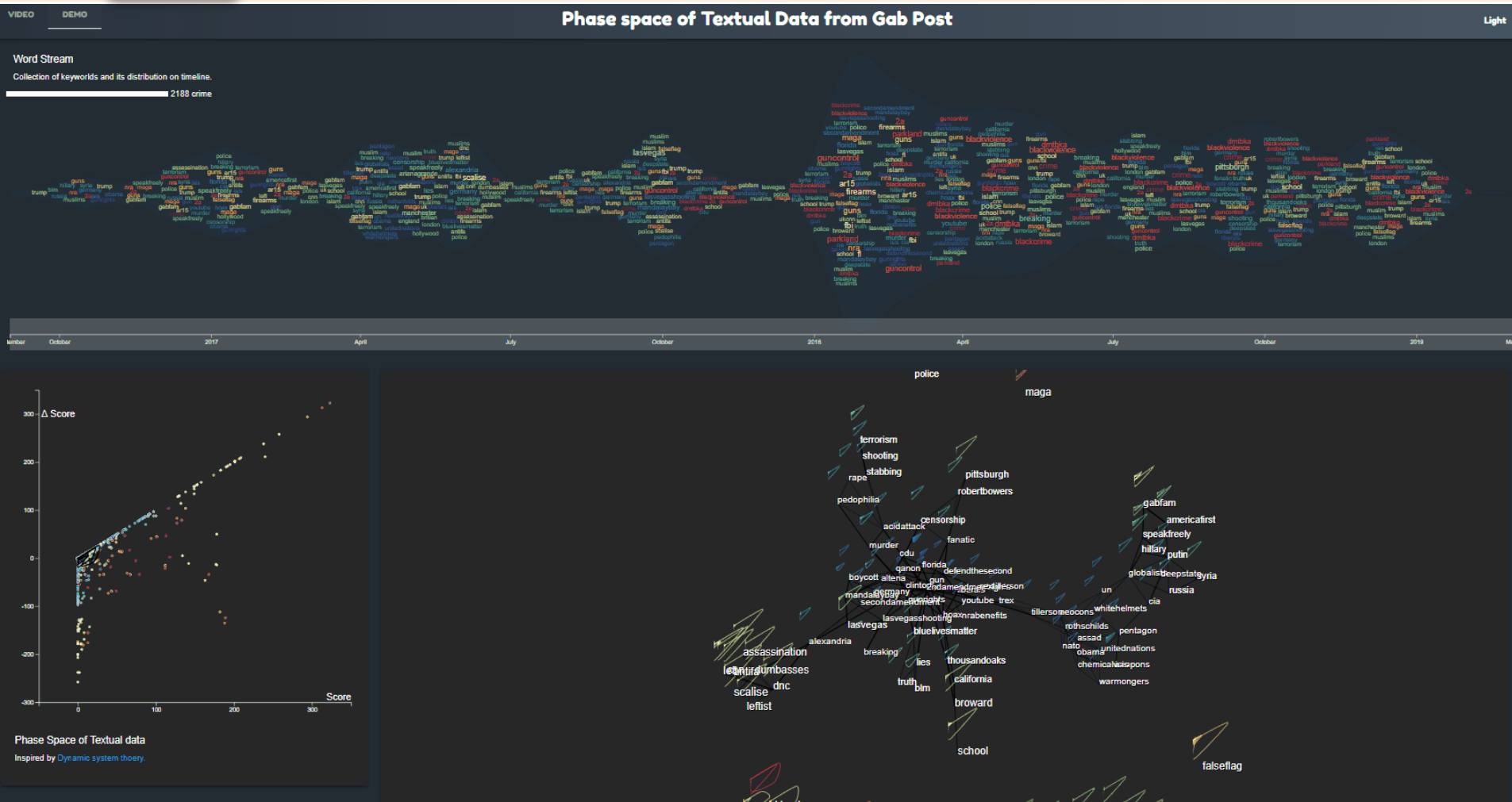Phase Space of Textual data

Mouse event:

- Drag and drop

- Zoom

- Hover to focus

  on connections

Case study

gab ght light topic and main events: Guncontrol and Mass shooting events

Shooting event: Broward Sheriff - South Florida **school** shooting

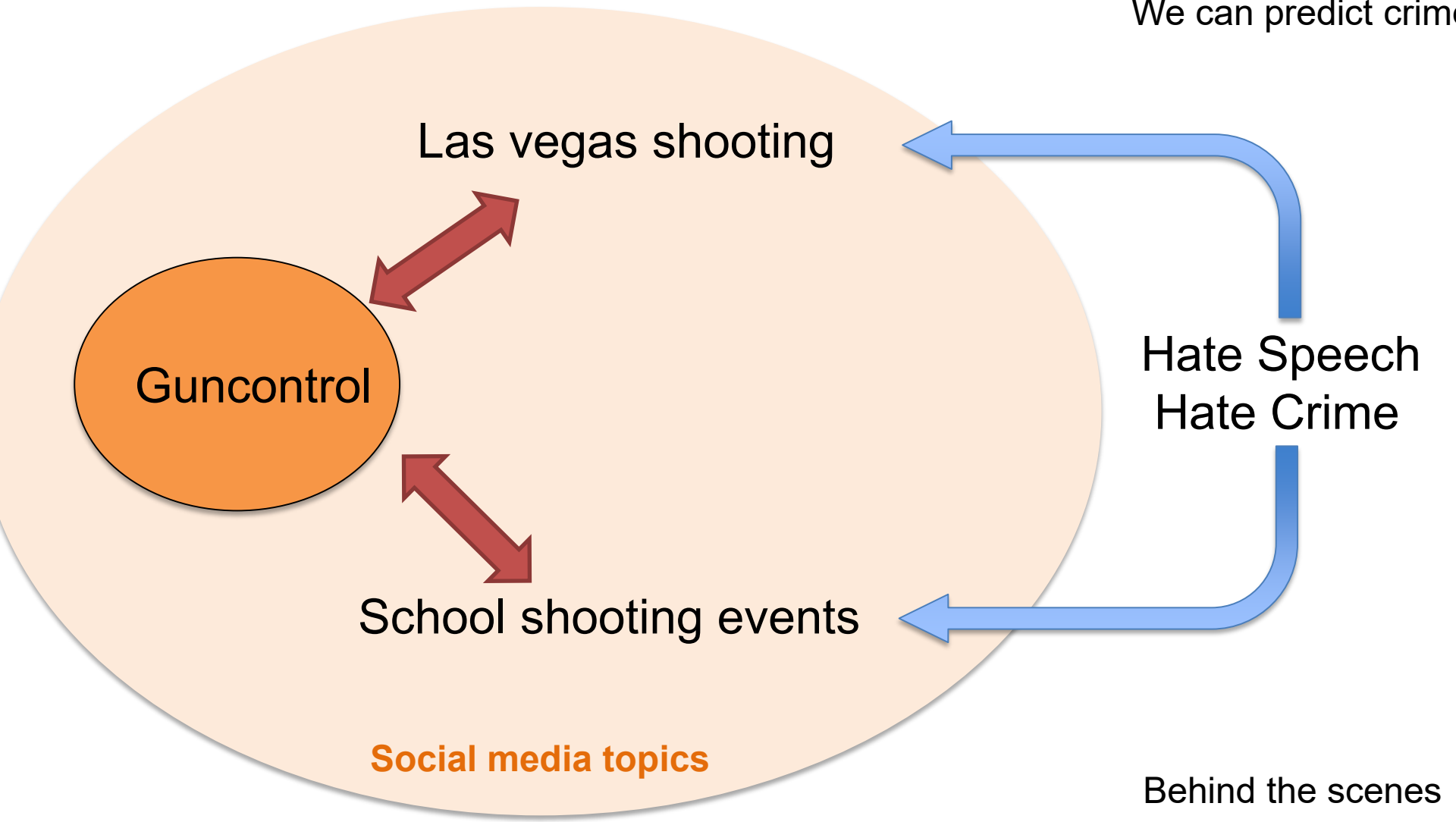**gab** **Topics relationship**

We can predict crime

Las vegas shooting

Guncontrol

School shooting events

Hate Speech
Hate Crime

Social media topics

Behind the scenes

Case study (cont.)

Monitoring High Performing Computing Center

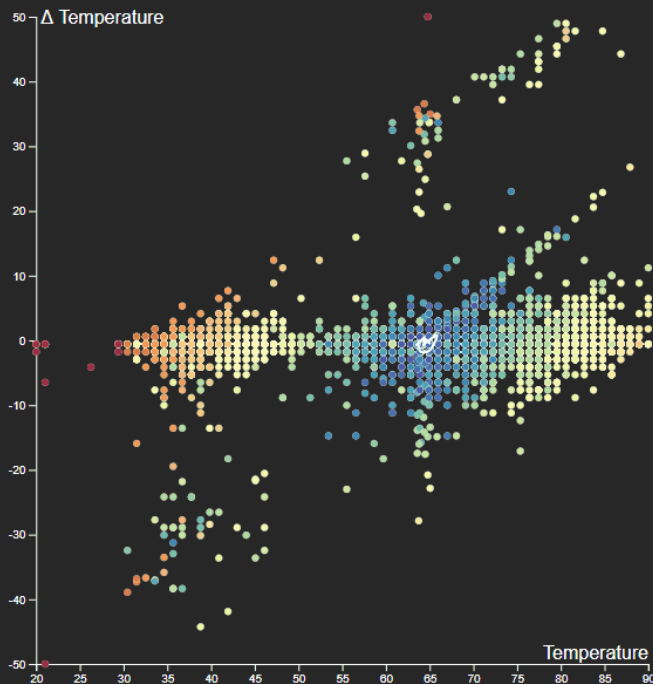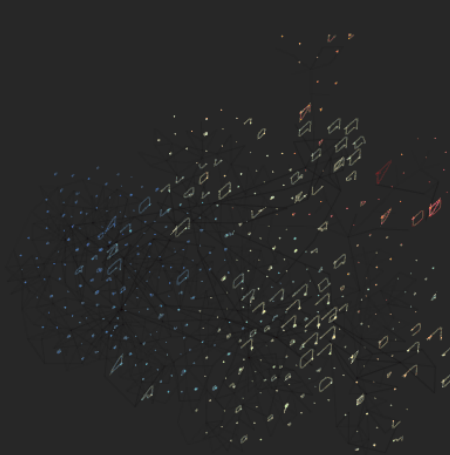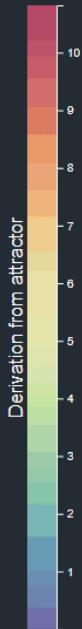Computers have same signature can perform same job or have related event
E.g: Computer 3.10 and Computer 3.11

Conclusion and Future work

We:

- Introduced **SpacePhaser** - an interactive visual prototype for textual pattern analysis based on **the dynamical system theory**, not only for **text analysis** but also for **other domain** such as monitoring the CPU temperature in a high-performance computing center.

Future work:

- formal study to validate our approach on different populations of **users from various application domains**
- **predictive analysis**: building a multiscale hierarchical physical model based on scale dependent anisotropic random walks to incorporated into generative codes

Questions?

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