SimMapper
A Tool for Creating Similarity Maps from Multidimensional Datasets

Group 3
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Information Visualization

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Project Topic

- Similarity Map Tool

- GUI around DruidJS:

  - JS library for dimensionality reduction.

- Functionality:

  - Select dataset

  - Reduce dimensions

  - Visualize

  - Export

https://github.com/saehm/DruidJS, https://renecutura.eu/pdfs/Druid.pdf

Project Setup

- TypeScript
- Gulp
  - Taskrunner
- Electron
  - For creating a stand-alone application.
- Rollup
- Bulma
  - Lightweight CSS library

- Libraries
  - Druid JS
  - D3
  - Plotly

DruidJS

- JavaScript library for dimensionality reduction.

- Project high-dimensional data to a lower dimensionality.

- Implemented dimensionality reduction methods.

    - PCA

    - TSNE

    - ISOMAP

    - UMAP

    - …

Open and Use CSV Datasets

- D3 library for CSV import.

  - Dataset is required.

- Select CSV encoding and separator.

  - UTF8, UTF16, …

  - Semicolon, Comma, Tabulator, …

- Display preview to user.

- Select dimensions.
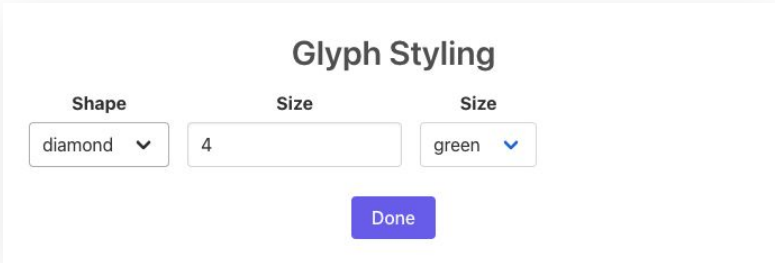
Dimension Reduction with Druid.JS

- Create a Druid Matrix (implemented in Druid.JS).

- Create new Druid object with parameters:

  - Druid Matrix

  - Dimension reduction method

- Transform to a 2D array.

- Normalize data.

Method: TopoMap
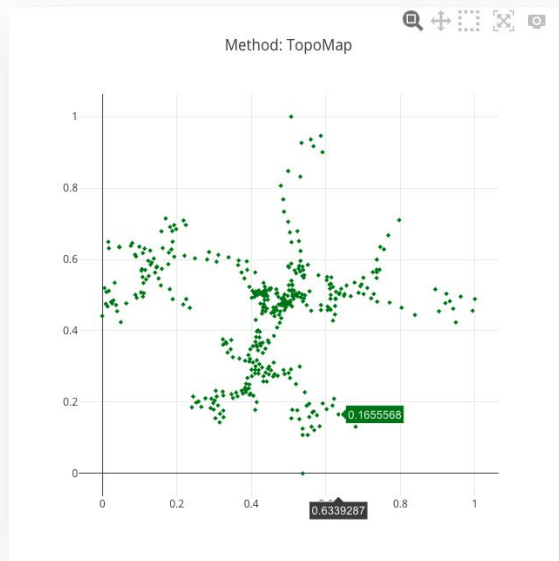
Visualization with Plotly

- User defined glyph styling:

  - Size, color, shape

- Plotly options:

  - Visualization type (scatter plot)
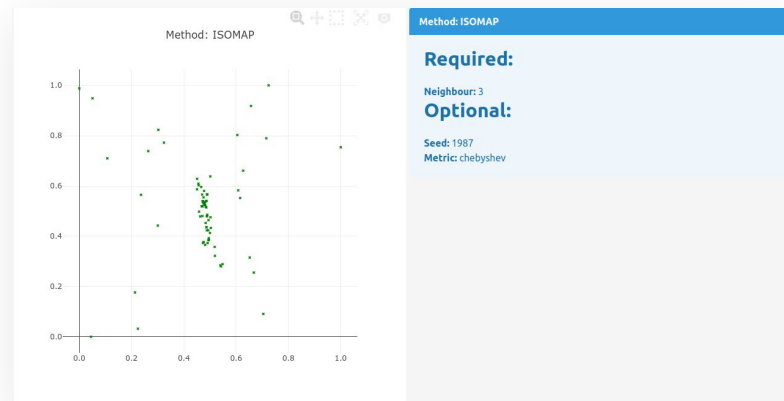
  - Responsive

  - Buttons (zoom, pan, export, …)

Further Functionality

- Responsive SVG export.

  - Replaced Plotly's export functionality.

- Help page.

- Automatic application configuration.

  - Remembers window size and position.

- Gitlab pages.

  - https://mj_massacre.gitlab.io/simmapper/view

Live Demo

https://youtu.be/fHhMxltjGOw
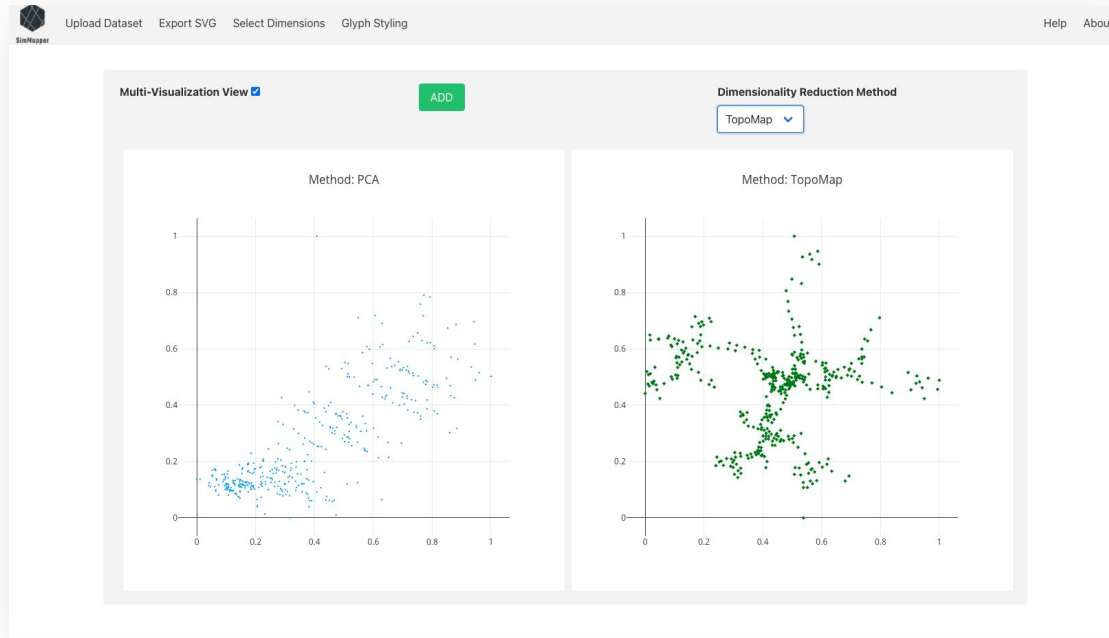
Future Work

- Multiple visualizations in one view.

  - Already started.

- Update individual graphs.

  - Select dimension reduction method, parameters, etc.

- Optimize/Extend export functionality.

- Extend visualization options (glyph styling).

- Optionally: Create Svelte components for different elements.

Thank you for your attention!

Questions?

SimMapper