

GLO-STIX: Graph-Level Operations for Specifying Techniques and Interactive eXploration

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+ GLO and GLO-STIX

- GLO: Graph Level Operations
 - 34 GLO's categorized into 5 classes.
 - Example: Evenly distribute nodes on x or y by (categorical attribute).
- GLO-STIX: Application for applying these GLO's to graphs

+ Why?

- Even though there are many graph visualization techniques, each technique captures different aspects of the data and is good for separate tasks.
- If an analyst wants to perform multiple tasks, he would need multiple visualizations.

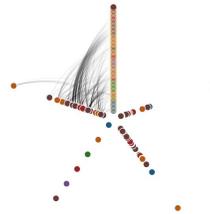
+ Finding Graph Level Operations

- Force - Directed Diagram
- Circle Plot
- Scatterplot
- Semantic Substrates
- PivotGraph
- Adjacency Matrix

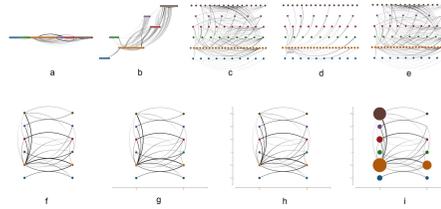
+ Advantages of GLO's

- Graph Exploration and Discovering New Techniques
- Easing the Engineering Challenge

Multi-dimensional technique akin to a hive plot or star diagram.



+ Arc Diagram-Semantic Substrates-PivotGraph



+ Types of GLO's

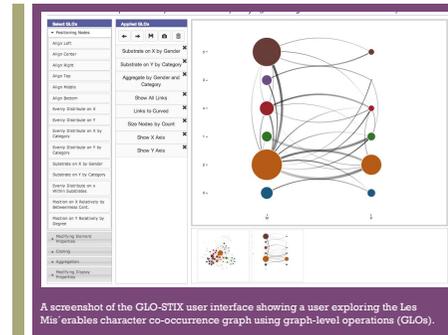
- Positioning Nodes
 - Evenly Distribute Nodes on x or y
- Modifying Element Properties
 - Size nodes by (constant)
- Cloning Nodes
 - Clone Active Generation
- Aggregating Nodes and Edges
 - Aggregate by (categorical attribute)
- Modifying Display Properties
 - Show x or y axis

+ Properties of GLO's

- Duplication of GLO's
- Parameterized GLO's
- Complementary GLO's
- The Generation Parameter
- Application of Techniques

+ GLO-STIX

- Implemented as a browser-based application.
- Written in Javascript using D3.js, jQuery, Bootstrap and jQueryUI
- Example dataset used: Les Mis' erables character co-occurrence graph.
 - 76 nodes
 - 254 edges



A screenshot of the GLO-STIX user interface showing a user exploring the Les Mis' erables character co-occurrence graph using graph-level operations (GLOs).



+ Critique

- Limitations mentioned in the paper
 - Does not support sub-graph selection or edge bundling.
 - No support for undirected graphs, or advanced directed graph such as trees.
 - Usability : length of list of active GLO's can become very long and confusing - No user study.
- Limitations not mentioned in the paper
 - How does GLO-STIX work for bigger graphs?
 - A user may end up creating visualizations which are completely useless by applying different GLO's. Too much flexibility may not be good.

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Thank you!
Questions?