

Model Driven Visualization of Large Scale Relational Networks

Issues

- **Scale:**
 - Focus on displaying certain
 - properties of the graph.
- **Speed:**
 - Feasible algorithms must run
 - in sub-linear time.
- **Abstraction:**
 - Derive a clustered graph that
 - corresponds with the model.
- **Interaction:**
 - Allow the user a means to
 - specify the model.

Overview

Model Driven Visualization (MDV) is an approach to generating visualizations based on a model given by the user. Goals include:

- Determining how to impose the model on the underlying graph.
- Developing algorithms whose complexity is not proportional to the size of the graph.
- Designing algorithms that are suitable for graph animation.

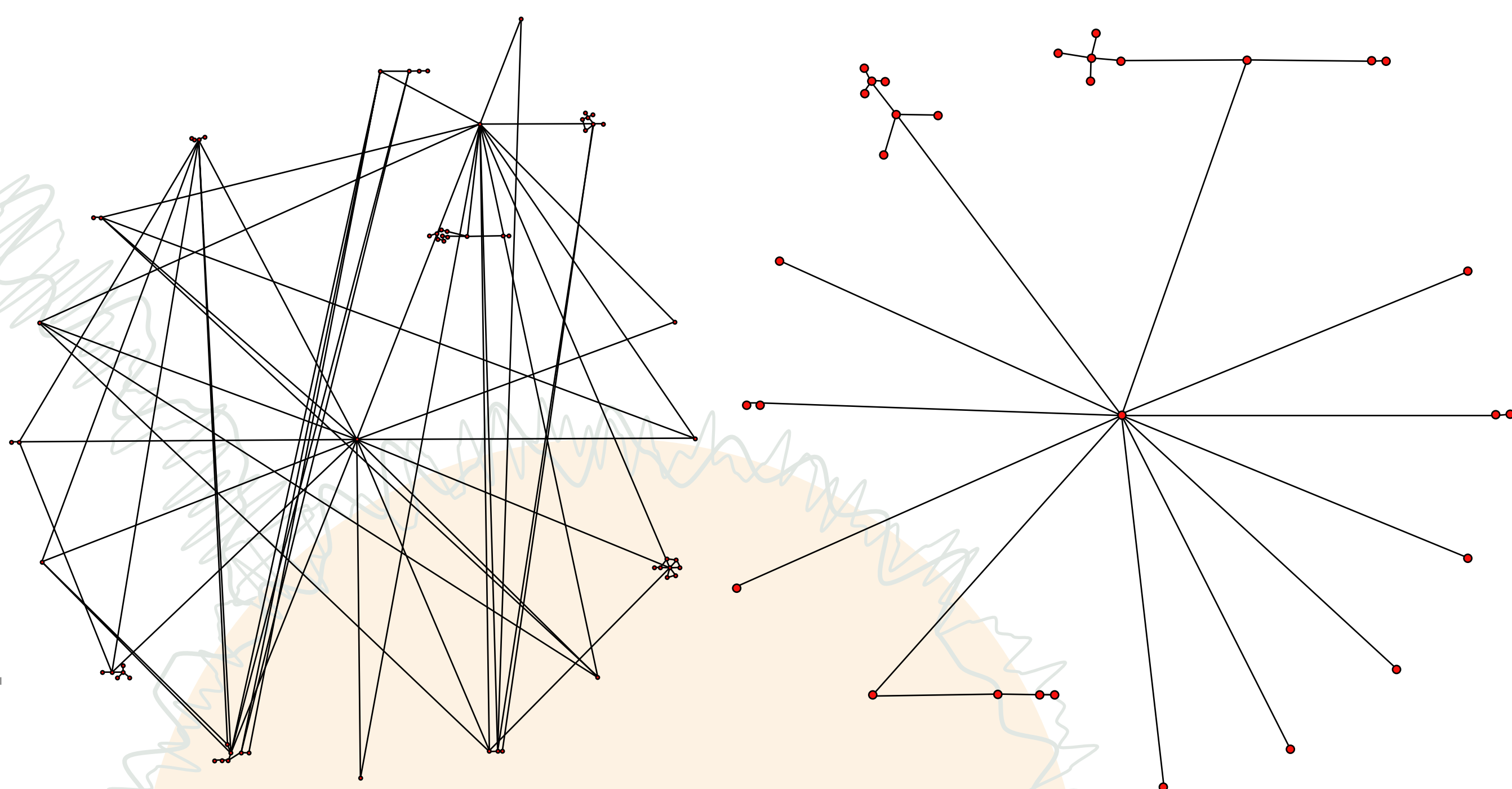
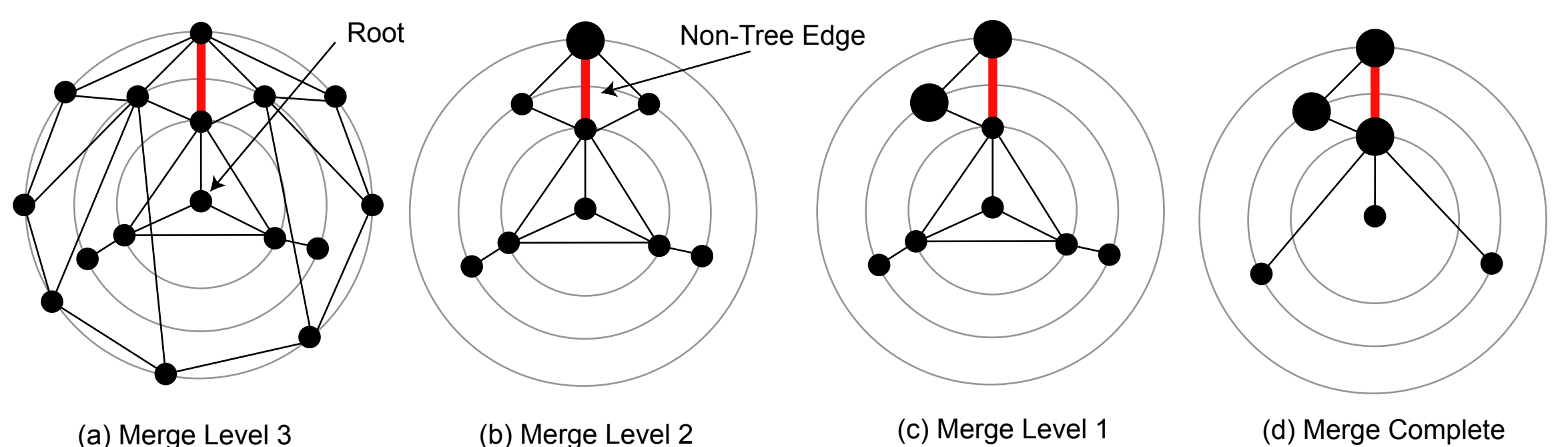
Applications include:

- Sketch-Based Interfaces
- Network and Software Visualization

Background

Background research in:

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- **Social Networks**
 - Stability of Importance
 - Measures
- **Graph Theory**
 - Geometric
 - Random
 - Spectral
- **Graph Drawing**
 - Clustered Graphs
- **Average-Case Analysis**
 - Algorithms Operating
 - on a Metric Space



Imposed Tree on a Collaboration Network
Before (left) and After (right) Merging

Publications

- (Under Review to GD2006) Imposing a Tree Structure on an Undirected Simple Graph.
- (In Progress) Subadditive Properties of Various Graph Drawing Techniques.
- (Presentation) Average Case Analysis of Wireless Networks.

Future Work

- Impose more General Structures on Graph.
- Approximation Algorithms to Work for Large Graphs.
- Investigate Applications of Current Research.