An interactive tool for analyzing and visualizing Kronecker Graph

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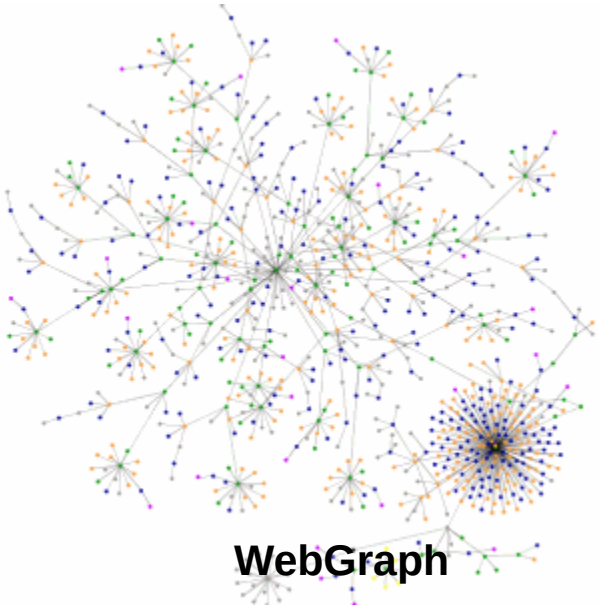
Kronecker graph

Promising model for real networks, ...

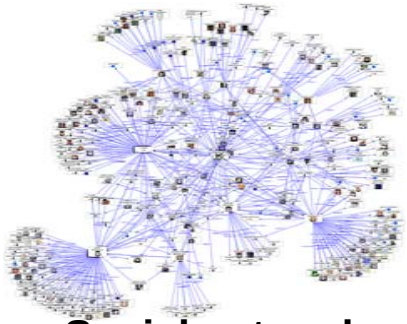
- **Network structure, null-model, simulations, extrapolations, sampling, graph similarity, graph visualization and compression, anonymization …**



WebGraph

… however,

- **Lack of understanding about the model.**
- **Lack of tool to study the structure of Kronecker graphs.**
- **Lack of simple, automated tool to generate Kronecker graphs with desired properties.**
- **Primitive visualizing tools.**

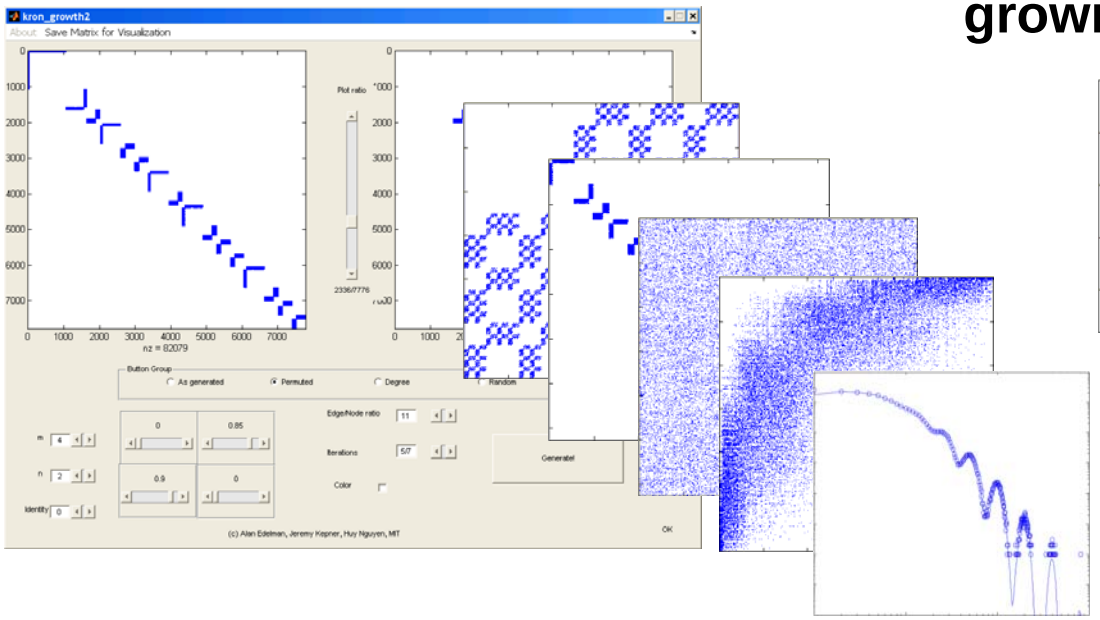


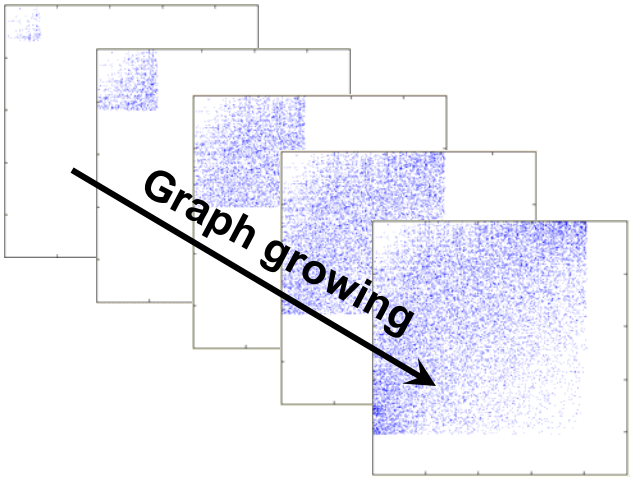
Social network

Citation network

Interactive tool for generating and analyzing Kroneck graphs

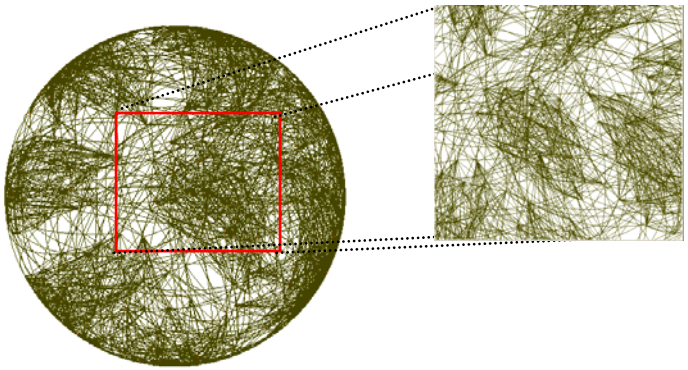
- **Generate instance from a rich class of (stochastic) Kronecker graphs:**
  - **Flexible desired properties.**
  - **Graph with millions of vertices on a commodity computer.**
- **Analyze Kronecker graphs from different perspectives: as generated, randomized, degree sorted, bipartite sub-structure detected, degree distribution, scree plot, hop plot …**
- **Simulate graph organic growing.**



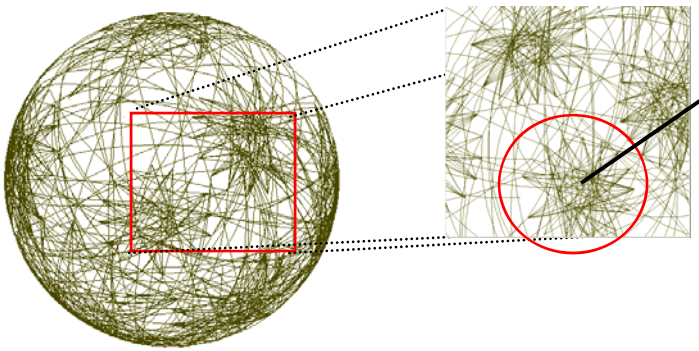


Visualization tool

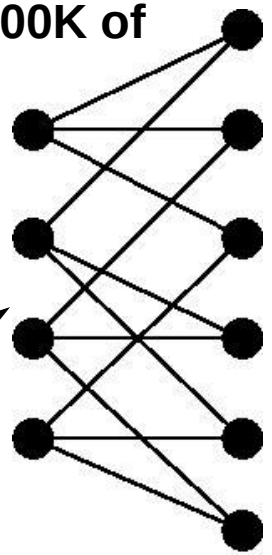
- **Built in 2D visualization.**
- **3D visualization on sphere surface:**
  - **Take advantage of Kronecker graphs' structure**
  - **Better visualizing quality than the Fiedler embedding.**
  - **Easily scalable .**
- **Implemented on MIT Video Wall:**
  - **60 panels, 2560x1600 pixel each, 240 Megapixel display system.**
  - **Visualize graph up to 100K of vertices.**



Fiedler embedding



Our visualization algorithm



Detected bipartite sub-structure