

Information Visualization based on Network-Mining and Cognitive Computing

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NEED & INDUSTRIAL RELEVANCE

- Need to explore and evaluate the fits and benefits of cognitive computing to their organizations.
- Need to integrate heterogeneous information networks for analysis and mining.
- Need practical visualization interfaces for multi-network exploration.

PROJECT GOALS

- Apply cognitive computing for modeling and simulation of multi-layer network structures.
- Create a novel visual interface for network exploration and discovery.



OBJECTIVES

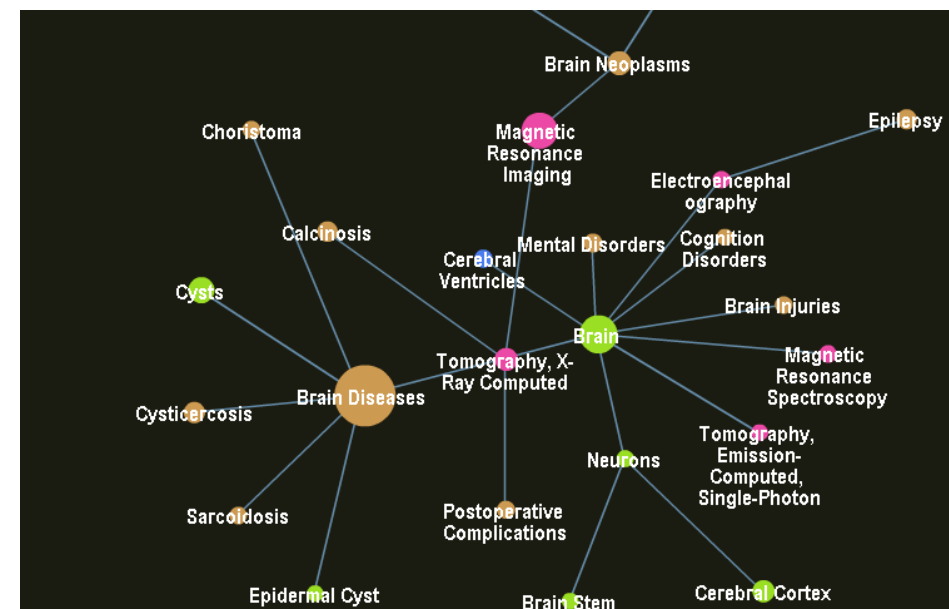
- Develop a multi-layer network structure for heterogeneous information networks.
 - knowledge graph with co-citation network and concept co-occurrence network.
 - Personal health records and networks of diseases, drugs, and treatments
- Develop a learning algorithm based on cognitive computing to traverse through the multi-layer network structure for modeling and simulation.
- Create a visualization interface to support visual mining and knowledge discovery in the heterogeneous network environment.

APPROACH (RESEARCH METHODS)

- Use cognitive computing methods to develop a multi-layer knowledge graph for a sample citation data set (or other data sets of heterogeneous information networks).
- Develop learning algorithms that traverse through the multi-layer knowledge graph.
- Create a visualization interface to support pattern recognition, missing link detection, and knowledge discovery in a visual environment.
- Test and evaluate the learning algorithms and the prototyped interface.

DELIVERABLES/OUTCOMES

- Novel learning algorithms for knowledge exploration and discovery.
- Methods for mapping and integrating multiple information networks.
- prototype visualization interface.
- Publications in relevant scientific research conferences or journals.



IMPACT

- Useful results from this project can be applied to
- Knowledge discovery and visualization.
 - Pattern detection in heterogeneous information networks.
 - New measures for impact of scientific papers or scientific outputs.
 - New Cognitive computing applications.

