




AutoMap: Software for Network Text Analysis

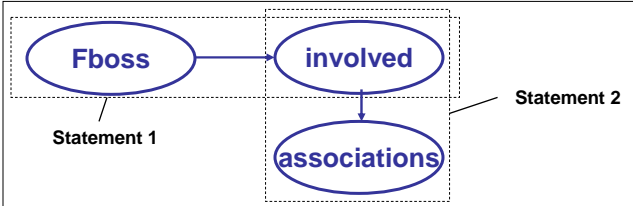
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What is Network Text Analysis? Methodology




- NTA: Encode the links between words in a text and construct a network of the linked words.
- Assumption: Model language and knowledge as networks.
- Map Analysis (Carley): Extract and analyze:
- Focus: meaning.

“Fboss is actively involved in several industry and civic associations.”






Map

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CASOS  **What can we use NTA for?**  

- Analyze mental models from individuals and groups. (Entrepreneurs)
- Reveal structure of social and organizational systems. (Covert networks)
- Generate network data. (Covert networks)

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CASOS  **What methods does AutoMap support?**  

Methods:

- Map Analysis
- Meta-Matrix Text Analysis
- Sub-Matrix Analysis
- Map Comparison and Consolidation

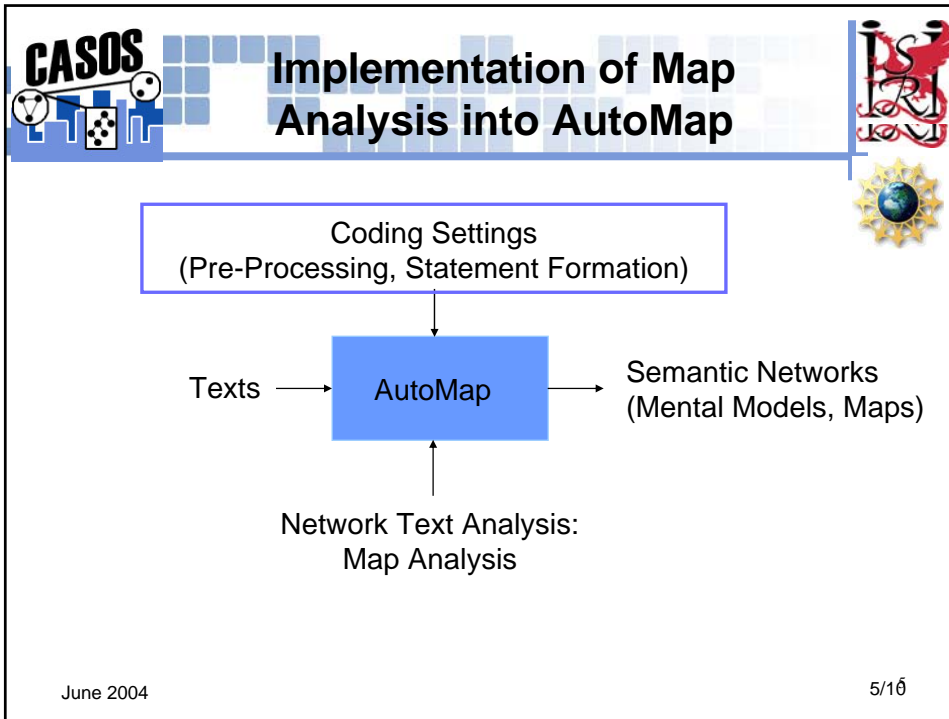
Concept based techniques:

- Occurrence, frequencies, and covariance of concepts, themes, and statements
- Subsumes traditional content analysis

Network/ Map based techniques:

- Extract and analyze meaning: relationships between and among concepts and themes

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- CASOS** Pre-processing: What concepts to consider?
- “Fboss is actively involved in several industry and civic associations.”
1. Named Entity Recognition
Fboss
 2. Stemming
“Fboss be activ involv in sever industri and civic associ.”
 3. Deletion
Delete List: is, in, and
“Fboss xxx actively involved xxx several industry xxx civic associations.”
 4. Thesaurus application
fboss/ leader
Involved in/ participate
associations/ organizations
“Leader actively participate several industry civic organizations.”
Thesaurus content only: “Leader participate organizations.”
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Statement Formation: How to link concepts?



Distance based approach, Windowing (Danowski)



Fboss is actively involved in several industry and civic associations.

Map:
Fboss – is
is – actively
actively – involved
...

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Extension of Map Analysis: Meta Matrix Text Analysis



Meta-Matrix	Agent	Knowledge	Resource	Task/Event	Organization	Location
Agent	Social network	Knowledge nw	Capabilities nw	Assignment nw	Membership nw	Agent location nw
Knowledge		Information nw	Training nw	Knowledge requirement nw	Organizational knowledge nw	Knowledge location nw
Resource			Resource network	Resource requirement nw	Org. Capabilities nw	Resource location nw
Task/Events				Precedence nw	Org. Assignment nw	Task/Event location nw
Organization					Interorg. nw	Org. location nw
Location						Proximity nw

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Network Text Analysis and AutoMap - More information -



- Installer for AutoMap for Windows, examples, help file, publications:
<http://www.casos.cs.cmu.edu/projects/automap/>
- Recent Publications:
- Diesner, J., & Carley, K.M. (2004 - in print). Revealing Social Structure from Texts: Meta-Matrix Text Analysis as a novel method for Network Text Analysis. In V.K. Narayanan, & D.J. Armstrong (Eds.), *Causal Mapping for Information Systems and Technology Research: Approaches, Advances, and Illustrations*. Harrisburg, PA: Idea Group Publishing, pp.
- Diesner, J., & Carley, K.M. (2004). AutoMap1.2 - Extract, analyze, represent, and compare mental models from texts. Carnegie Mellon University, School of Computer Science, Institute for Software Research International, Technical Report CMU-ISRI-04-100. URL: <http://reports-archive.adm.cs.cmu.edu/isri2004.html>
- Carley, K.M., Diesner, J., Reminga, J., Tsvetovat, M. (2004). *An Integrated Approach to the Collection and Analysis of Network Data*. In Proc of the NAACSOS 2004 Conference, Pittsburgh, PA. http://www.casos.cs.cmu.edu/events/conferences/2004_proceedings/Diesner_Carley.pdf
- Diesner, J., & Carley, K.M. (2004). *Using Network Text Analysis to Detect the Organizational Structure of Covert Networks*. In Proc of NAACSOS 2004 Conference, Pittsburgh, PA. URL: http://www.casos.cs.cmu.edu/events/conferences/2004_proceedings/Carley_Diesner_Reminga.pdf

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Network Text Analysis with AutoMap - Acknowledgement -



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