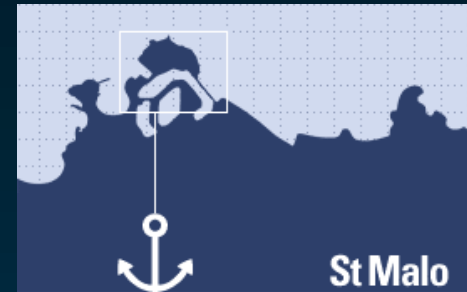


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Issues and perspectives for medical text indexing



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The Indexing Initiative

Motivation at NLM

- ◆ Increasing volume of biomedical literature
 - MEDLINE has grown from about 7 million citations in 1996 to over 12 million now
 - The number of journals indexed has grown from about 3,750 in 1996 to 4,600 now
- ◆ Increasing availability of full text
- ◆ Limited resources
 - Especially qualified indexers



The IND Project

[Aronson & al., *AMIA*, 2000]

- ◆ Objectives
 - Investigate automatic and semiautomatic indexing methods
 - Producing equal or better retrieval
- ◆ Initially, an independent collection of projects addressing
 - Indexing methods
 - Evaluation
 - Policy

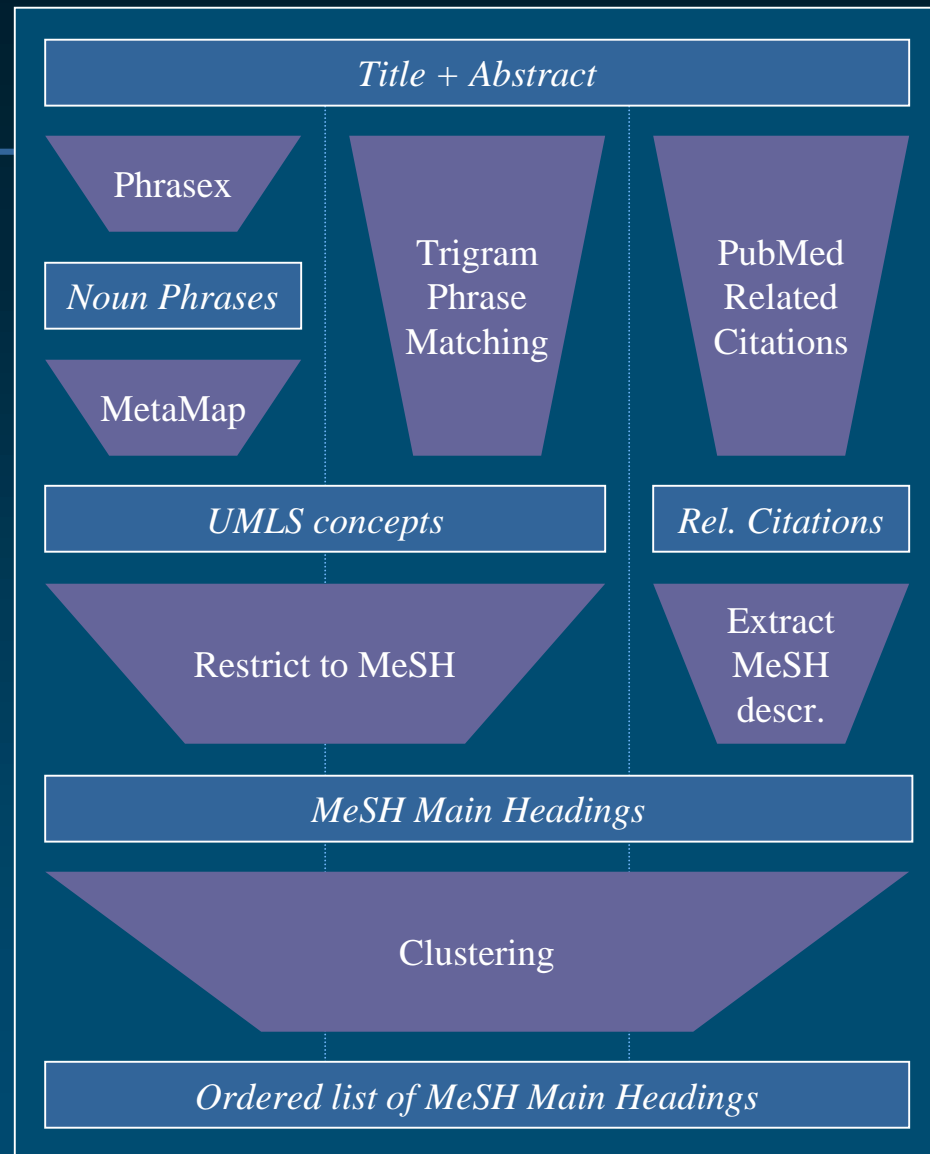
<http://ii.nlm.nih.gov>



Current status

- ◆ Semi-automatic indexing
 - New citations are indexed every night
 - Suggested descriptors integrated in the environment used by the indexers
 - Ongoing evaluation
- ◆ Automatic indexing
 - Collections not otherwise indexed
 - Descriptors not displayed

Overview



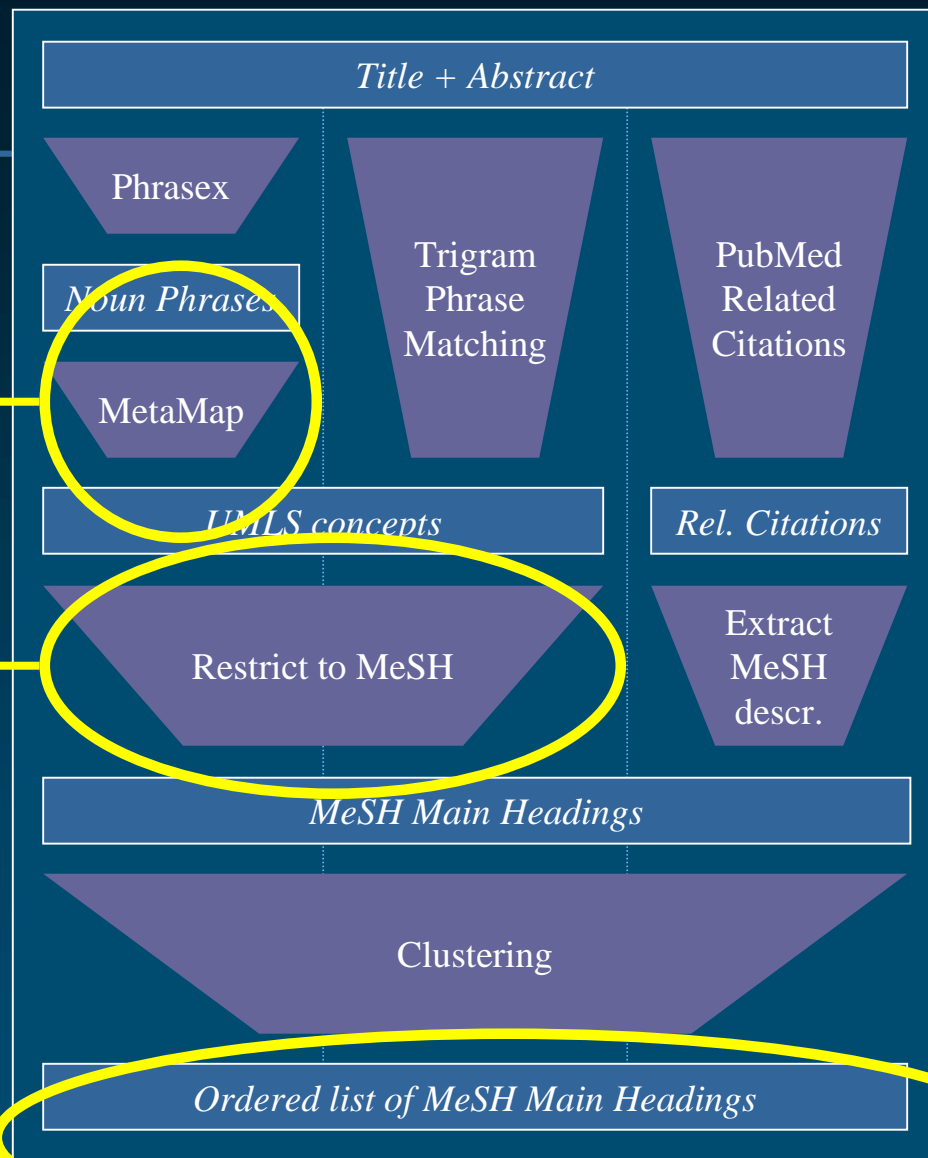
Three issues

Three issues

Word-sense ambiguity

Terminology vs. ontology

Evaluation



Word sense ambiguity

- ◆ Inherent to natural language processing (NLP)
- ◆ Active research field
- ◆ Compounded in the biomedical domain
 - Acronyms / abbreviations
 - Gene / gene product names
 - Terms not fully specified

Terminology vs. ontology

- ◆ Hierarchies often task-driven rather than based on principles
- ◆ Usually suitable for information retrieval
 - Better recall
 - Precision may not be crucial
- ◆ Not necessarily suitable for reasoning

Evaluation

- ◆ Index-based
 - Gold standard
 - But no ground truth
 - Similarity measures
 - But multiple perspectives possible
- ◆ Retrieval-based
 - Requires test collections
- ◆ System-vs. user-centered



Perspectives

Perspectives

◆ Requirements

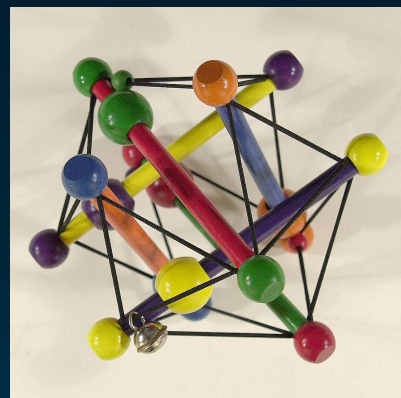
- Better ontologies
- Better identification of specialized entities (e.g., gene names)
- Better word-sense disambiguation techniques

◆ Tremendous interest

(through data mining and knowledge discovery)

- In the medical informatics community
- And beyond (KDD cup 02, genomic track at TREC 03)





Medical Ontology Research

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