

Extracting and visualizing research impact semantics

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A research position is open...

- Publication record
 - Count
 - Journal / book / chapter / conference
 - Monograph / coauthored
 - Author number
 - Career / recent
- Researcher has # <criteria used> publications

A research position is open...

- Citation record
 - Count
 - h-index
 - s-index
 - third party / self / co-authors'
 - Career / recent

A more specific example

- A position in the field of ontology development methodologies
- Publication record filtered
 - Same topic
 - Relevant scope
 - Irrelevant
- Citation record
 - Still just a number

Two candidates

- Stephen H.
 - Cited by 93034
- Panos A.
 - Cited by 69

Citation filtering

- Thematic scope
- Publications
 - Full content
 - Title
 - Abstract
 - Keywords

Medium as scope

- Publication criteria
 - Importance
 - Technical soundness
 - Novelty
 - Relevance
- Scope
 - Title
 - Keywords / Topics

Citation record scope

- Acquire citation list
- Identify scope of each citation
- Analyze / aggregate
- Present

Citation list acquisition

- Scopus Author Detail Report
 - Restricted
 - Aggregate numbers
- Publish or Perish
 - Citation count
 - Google scholar link
- Google scholar
 - Overall number
 - Number per paper
 - List as a Google search result

Citation list acquisition

- Google scholar as a basis
- PoP-like application
 - Retrieve list of publications
 - Access and process online results
 - Populate local database
- Robot control limitations
 - and workaround ...

Scope of each citation

- Association of publication to topic
 - Publication to medium
 - Medium to topic
- List of publication media
- List of scientific topics
- Hierarchy(?) of topics
- Links between media and topics

Scope of each citation

- List of publication media
 - Large
 - Undocumented
 - Dynamic
- List of topics
 - ScienceDirect
 - Wikipedia
- Topic hierarchy
 - SMAP in semantics, social media, multimedia
 - Biomedicine in engineering, medicine

Scope of each citation

- List of media
 - Incremental approach
- List of topics
 - ScienceDirect as basis
 - Manual processing to further detail
- Topic tree
 - Fuzzy ontology
 - Ontology development methodologies

Scope of each citation

- Media to topics
 - Fuzzy ontology
 - Incremental approach
 - Semi-manual approach
 - Title
 - Keywords
 - Topics

Analysis / aggregation

- Analysis per topic
 - Intra-topic
 - Inter-topic
 - Topic to all
 - All to topic
 - Degrees
- Overall results
 - List of metrics
 - Percentages
 - “Reasonable” other

Analysis / aggregation

- Inter-topic
 - All to topic
 - More objective
- “Reasonable” other
 - Intuition

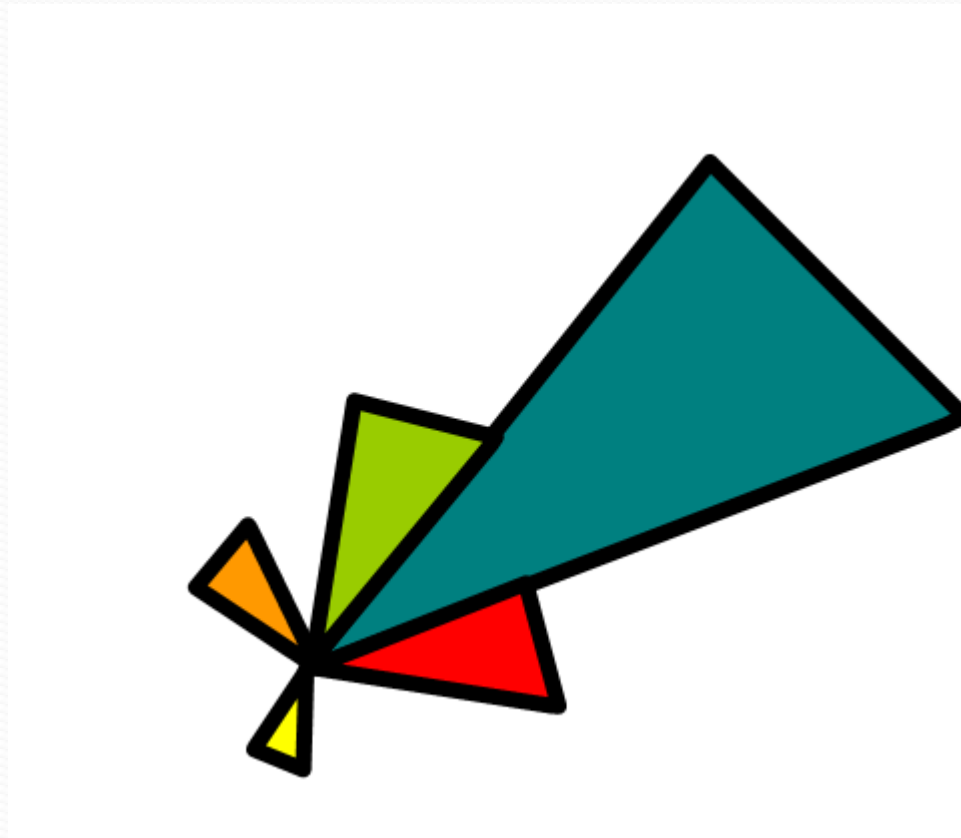
Presentation of results

- Generic citation analysis
 - Single number
 - Intuitive comparison
- Thematic scope aware analysis
 - Multiple numbers
 - Dependent on level of detail
 - Non-intuitive

Presentation of results

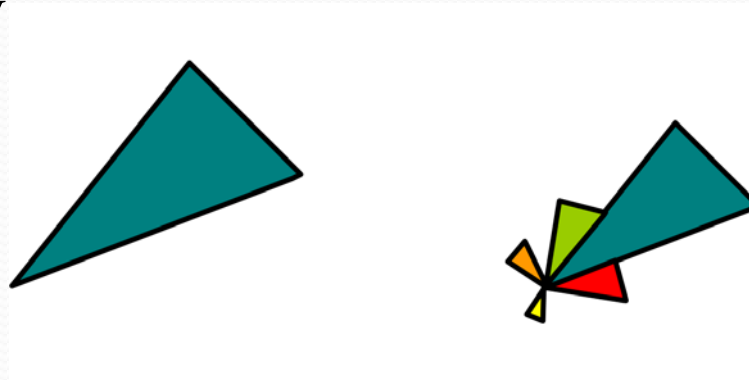
- Visualization of findings
 - Thematic direction
 - Weight
- Two dimensional representation
 - Volume for weight
 - Direction for scope
 - Color to assist intuitive reading

Presentation of results



Type of researcher

- Focused impact
 - Hawking
 - Theoretical physics, cosmology
- Broad impact
 - Gauss
 - Number theory, differential geometry, geodesy, electrostatics, astronomy



Future work

- Finish up
 - Citation list acquisition
 - Topic ontology
 - Medium to topic association
- Experiment
 - Intuitive aggregation
- Publish
 - Open source graphical tool
- Explore
 - Types of researchers per field

Thank you!

*Find as at:
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