

ConceptNet

<http://conceptnet.io/>

<https://github.com/commonsense/conceptnet5/>



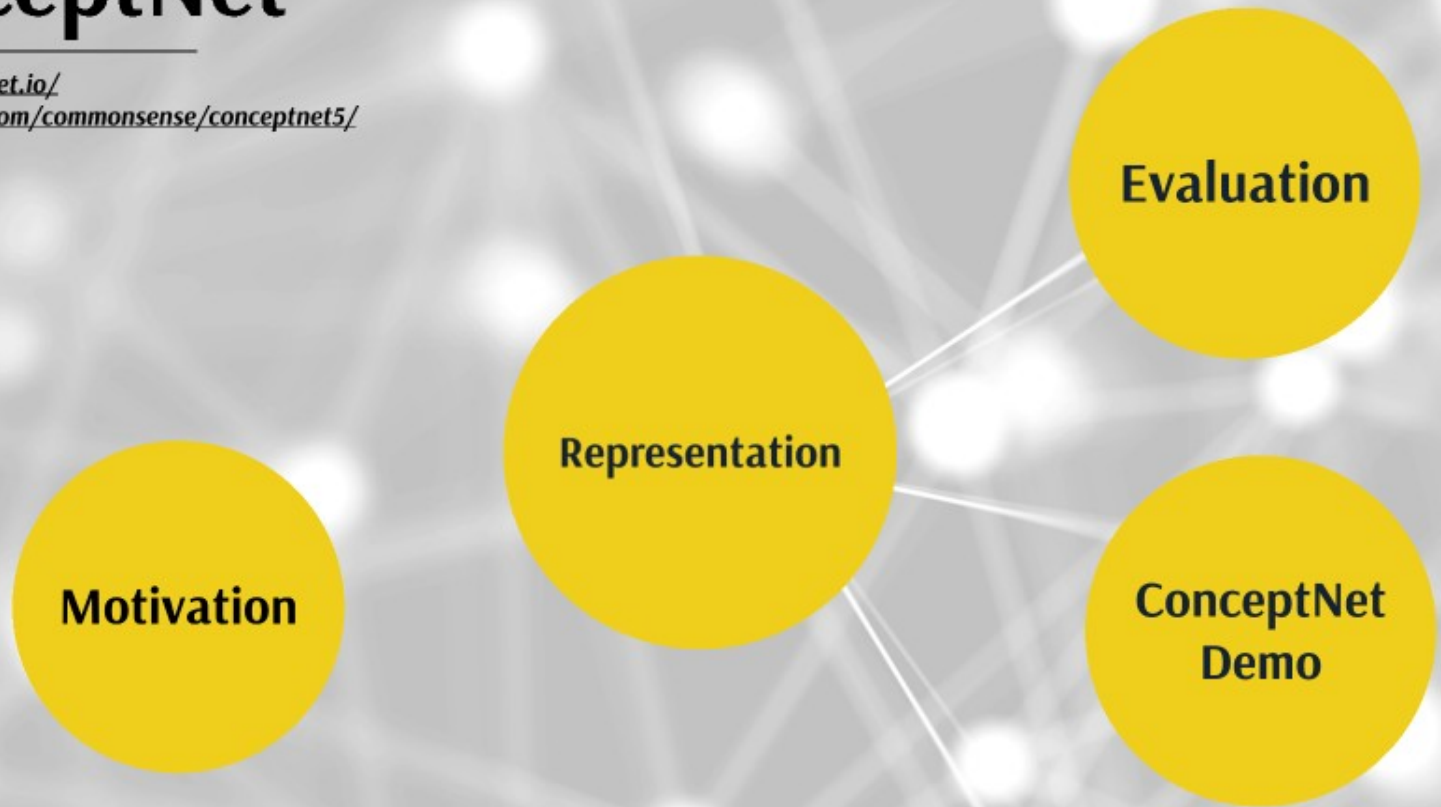
Motivation

- combine knowledge
- self growing
- normalize without information loss

ConceptNet

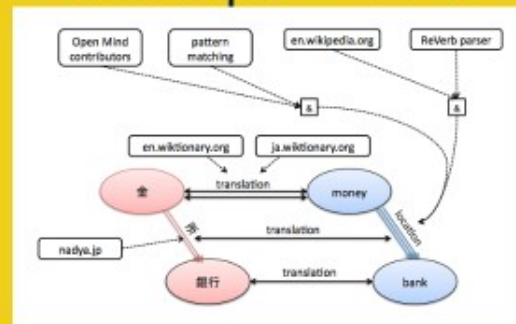
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Representation

- hypergraph
- assertion = edge
- concept = node

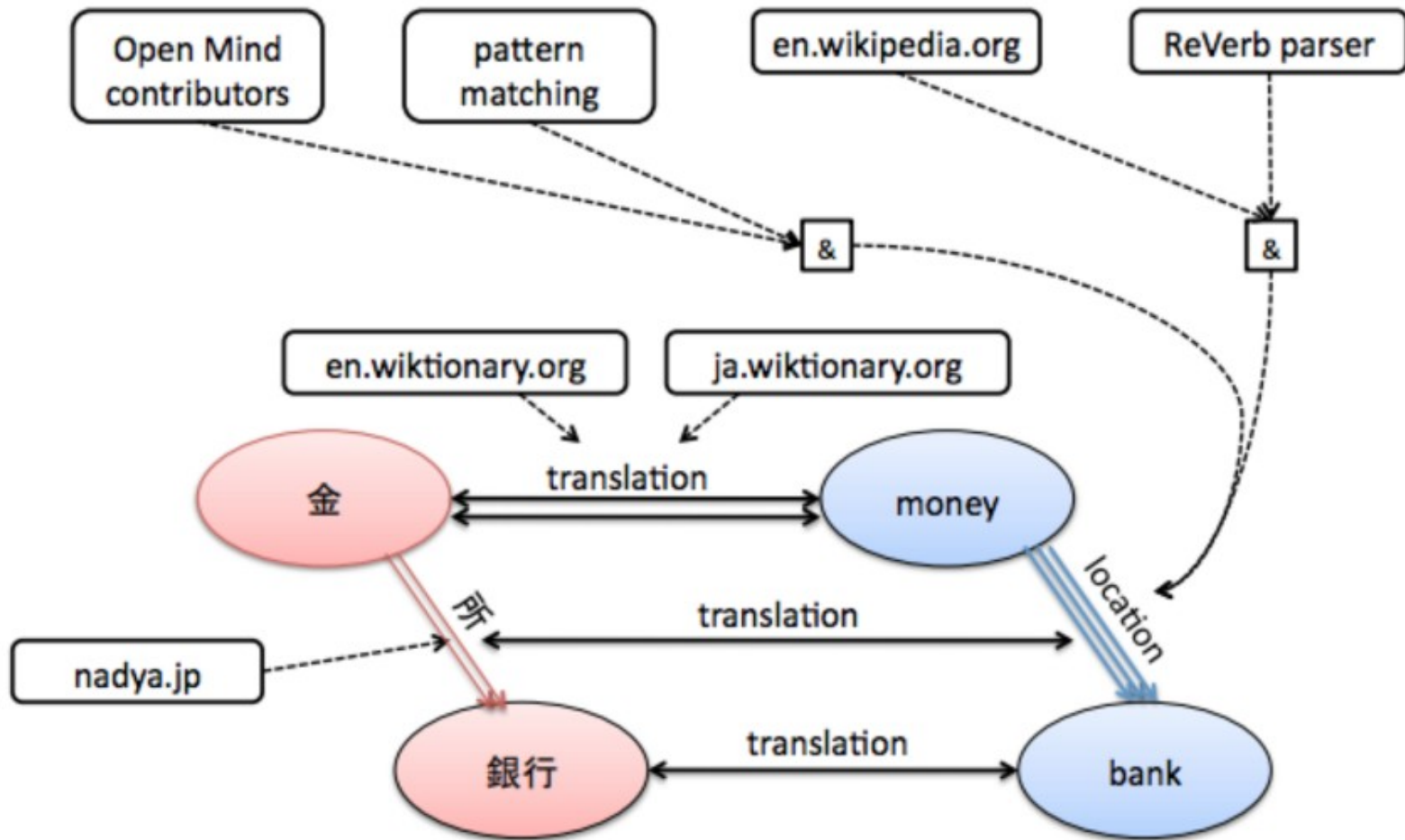


Sources

Assertions

Relations

Implementation



Sources

- OMCS English, Portuguese, Japanese, Dutch, Korean, French (ConceptNet 4)
- OMCS Chinese
- GlobalMind
- Verbosity
- Wiktionary translations
- WordNet
- DBPedia's type and location relationships (semantic connections between Wikipedia articles)
- JMDict
- OpenCyc via Umbel

Assertions

uri (called @id in the Linked Data API): a unique URI for the assertion

rel: the URI of the predicate (relation) of this assertion.

start: the URI of the first argument of the assertion.

end: the URI of the second argument of the assertion.

weight: typical weight is 1

sources: the sources that, when combined, say that this assertion should be true.

license: a Creative Commons URI for the license

dataset: a URI representing the dataset

surfaceText: the original natural language text

Relations

Relation	Sentence pattern	Relation	Sentence pattern
IsA	<i>NP</i> is a kind of <i>NP</i> .	LocatedNear	You are likely to find <i>NP</i> near <i>NP</i> .
UsedFor	<i>NP</i> is used for <i>VP</i> .	DefinedAs	<i>NP</i> is defined as <i>NP</i> .
HasA	<i>NP</i> has <i>NP</i> .	SymbolOf	<i>NP</i> represents <i>NP</i> .
CapableOf	<i>NP</i> can <i>VP</i> .	ReceivesAction	<i>NP</i> can be <i>VP</i> .
Desires	<i>NP</i> wants to <i>VP</i> .	HasPrerequisite	<i>NP VP</i> requires <i>NP VP</i> .
CreatedBy	You make <i>NP</i> by <i>VP</i> .	MotivatedByGoal	You would <i>VP</i> because you want <i>VP</i> .
PartOf	<i>NP</i> is part of <i>NP</i> .	CausesDesire	<i>NP</i> would make you want to <i>VP</i> .
Causes	The effect of <i>VP</i> is <i>NP VP</i> .	MadeOf	<i>NP</i> is made of <i>NP</i> .
HasFirstSubevent	The first thing you do when you <i>VP</i> is <i>NP VP</i> .	HasSubevent	One of the things you do when you <i>VP</i> is <i>NP VP</i> .
AtLocation	Somewhere <i>NP</i> can be is <i>NP</i> .	HasLastSubevent	The last thing you do when you <i>VP</i> is <i>NP VP</i> .
HasProperty	<i>NP</i> is <i>AP</i> .		

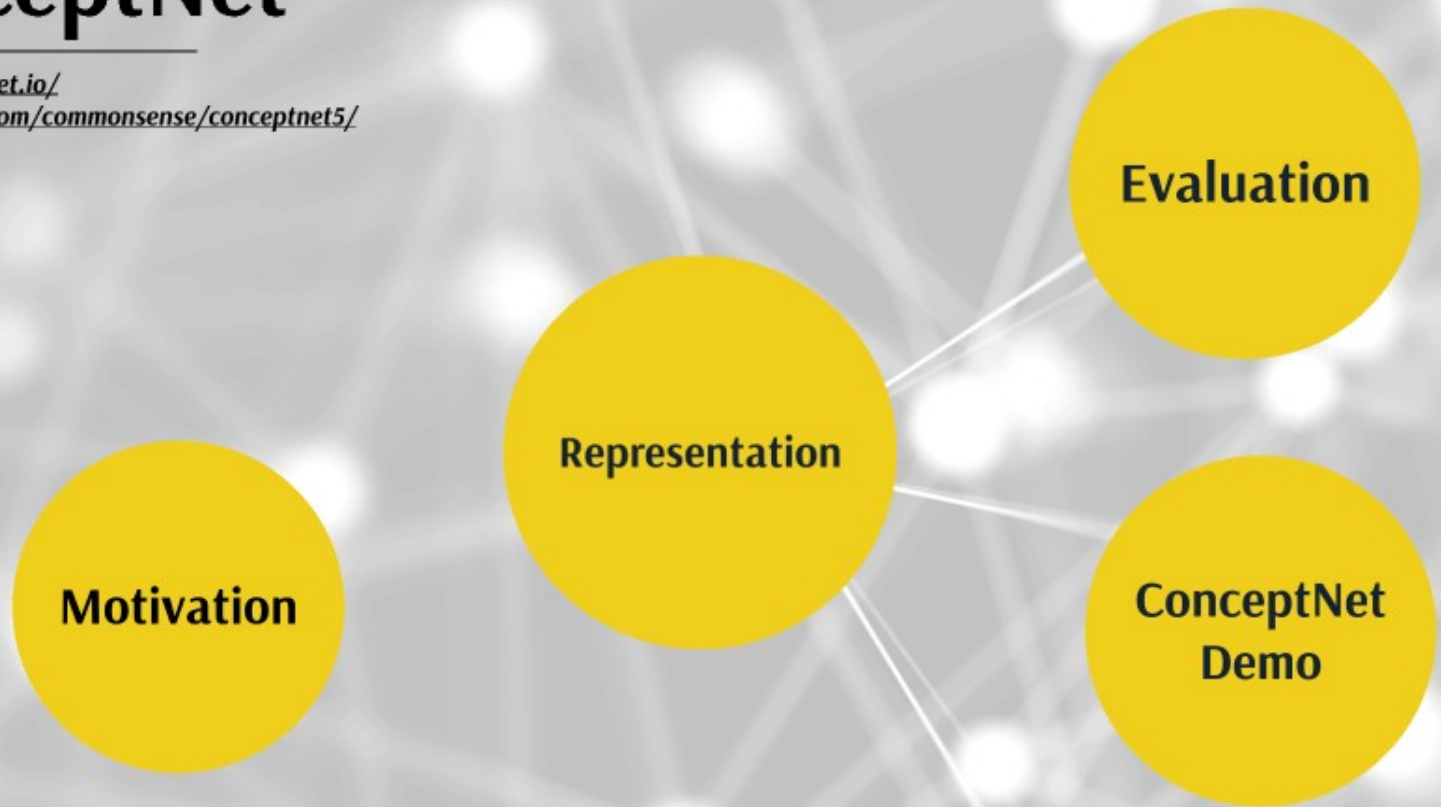
Implementation

- separate interface from data
- data: flat file of list of edges
- django app -- postgres (solr)
- indexing
- API

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Evaluation

- experiment
- word embedding



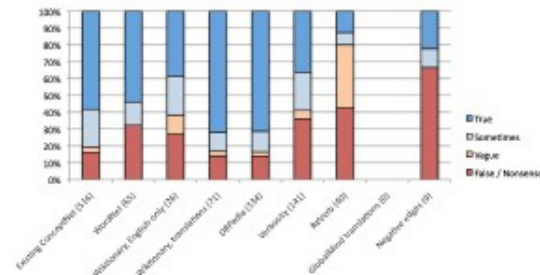
ConceptNet
Numberbatch

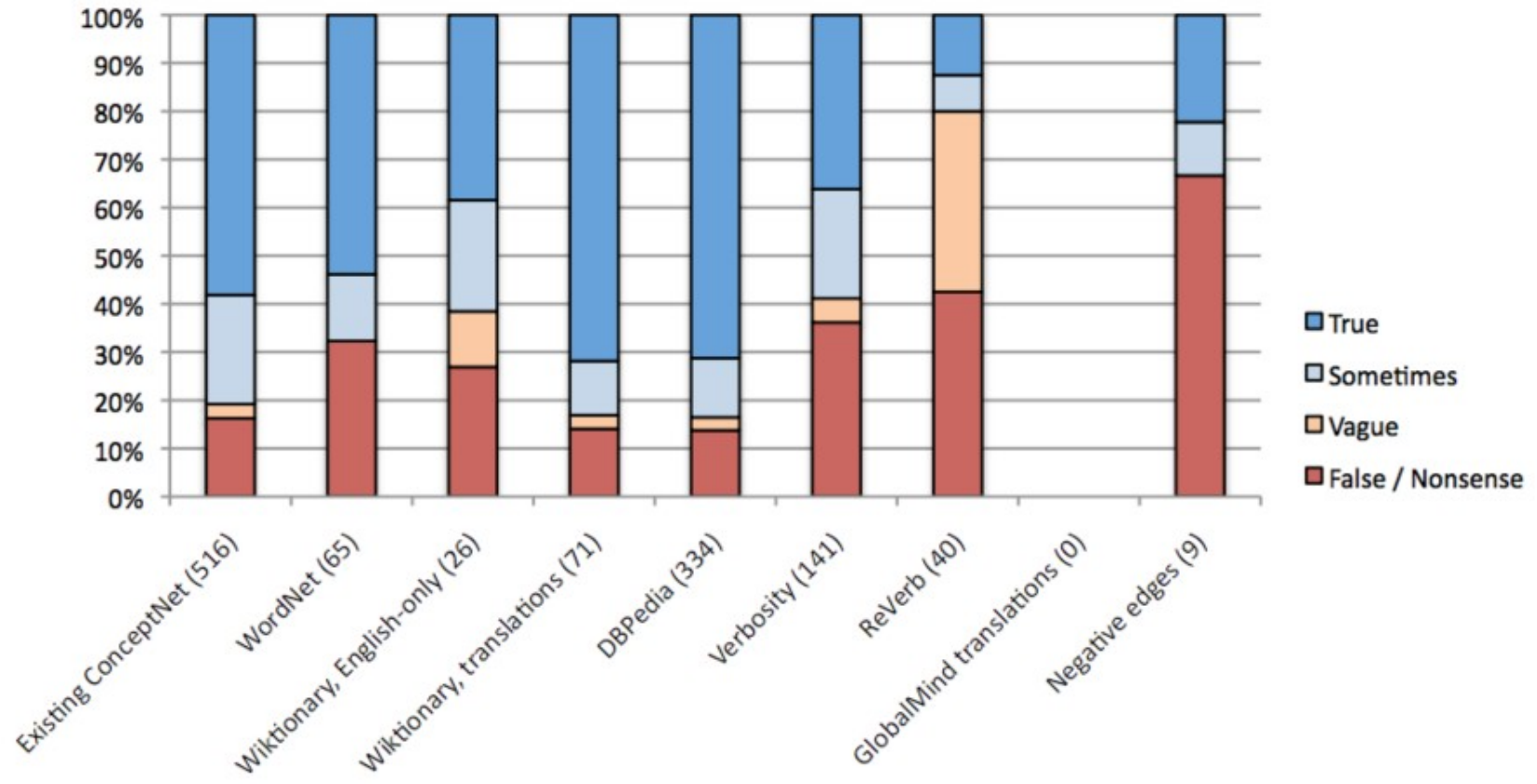
Website
experiment

Numberbatch

Website experiment

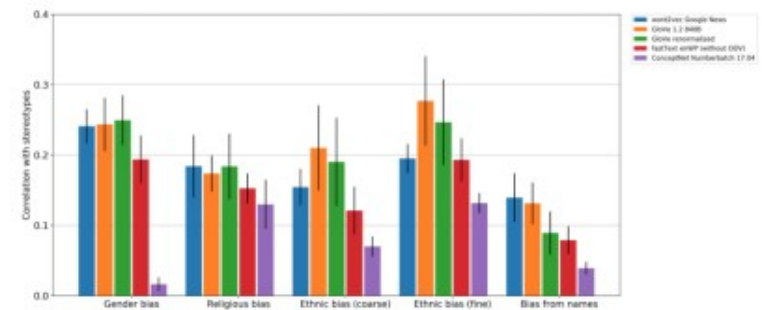
- 48 hour website
- 81 responses to random samples

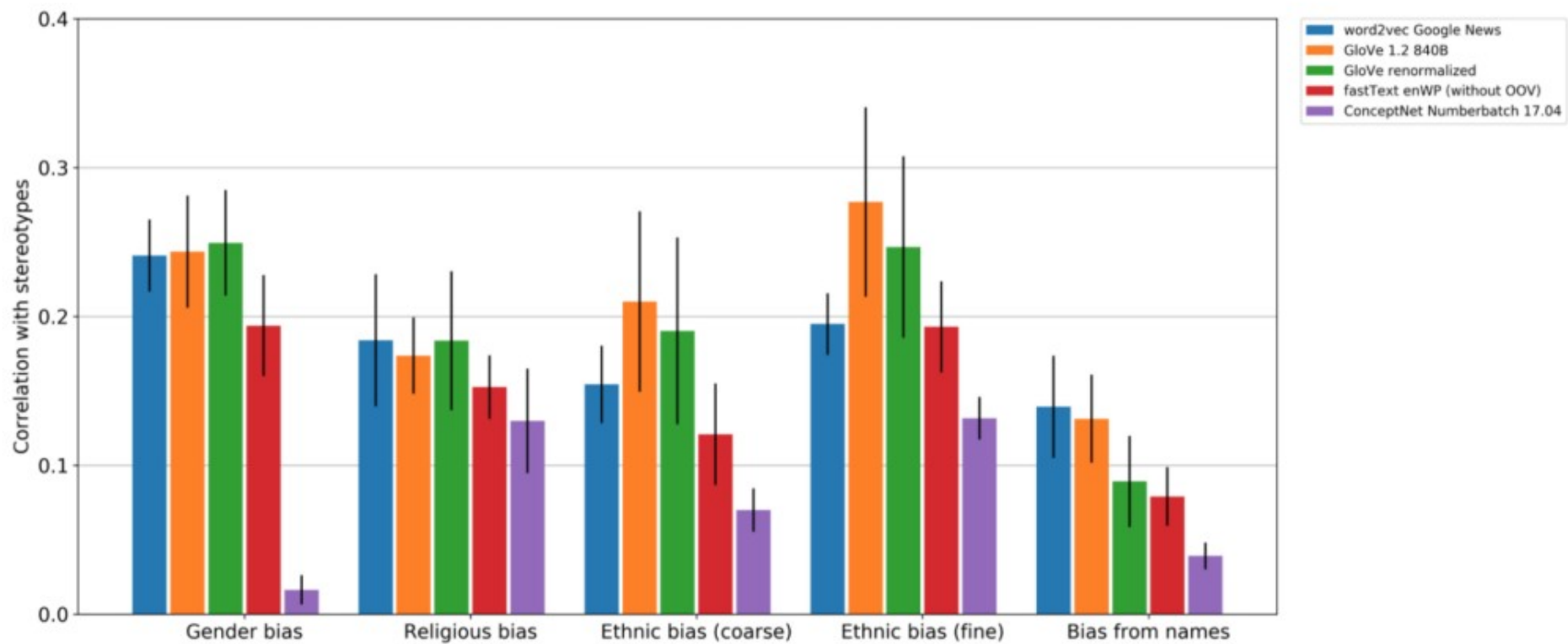




Numberbatch

- first place at SemEval 2017 task 2
- "Multilingual and Cross-lingual Semantic Word Similarity"

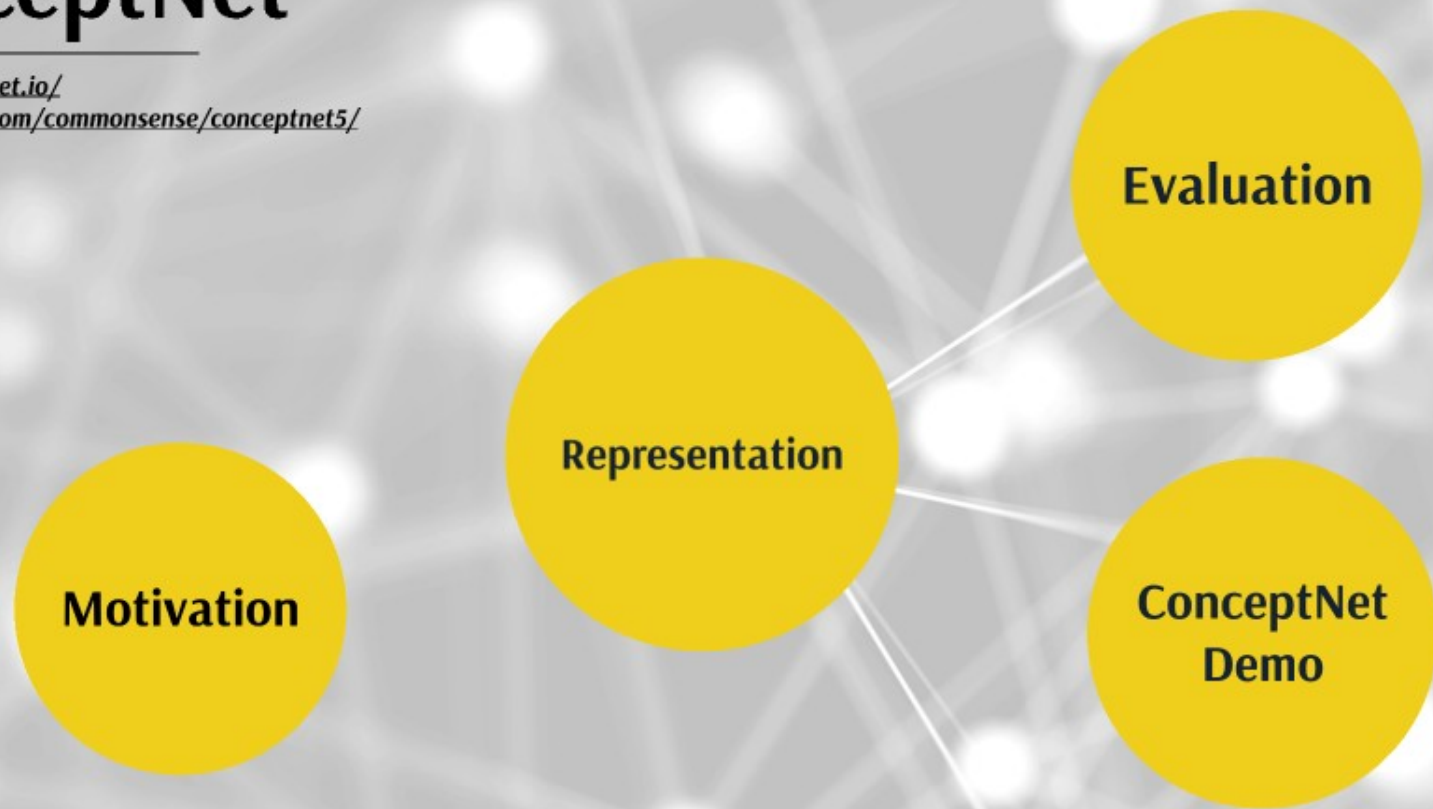




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ConceptNet Demo

- relations
- weight
- URI structure
- concept examples
- assertion example

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