



User Interests Driven Web Personalization based on Multiple Social Networks

Yi Zeng¹, Hongwei Hao¹, Ning Zhong², Xu Ren², Yan Wang²

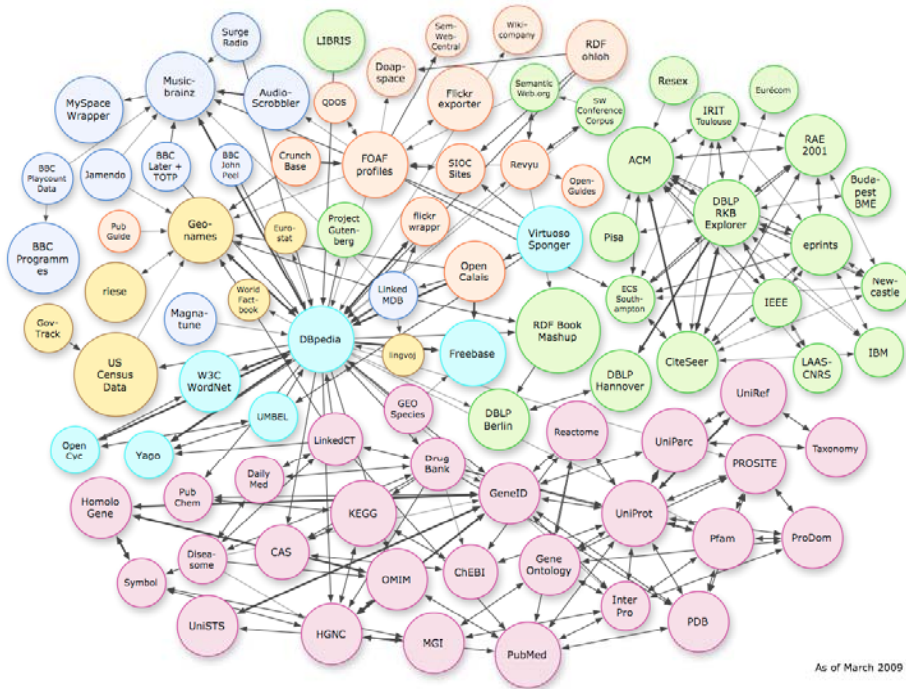
1. Institute of Automation, Chinese Academy of Sciences, P.R. China
2. Beijing University of Technology, P.R. China

Semantic Data at Web Scale

From large scale Web pages to large scale linked open semantic data



Number of Web Pages that Google indexes
 1998: 270 million
 2000: 1 billion
 2008: 1 trillion



As of March 2009

March, 2010: 13 Billion RDF Triples

October, 2011: 31.6 Billion RDF Triples



LATEST DATA

10:12:26	24 triples	http://zhp24.net...stwo-jest-nudne/?action=register	↑
10:12:26	162 triples	http://zhp24.net..horze-i-cynicy/?action=register	↑
10:12:26	4 triples	http://zetteandthecity.fr/tag/mia/	↓
10:12:26	4 triples	http://zetteandthecity.fr/tag/meteo-avril/	↓

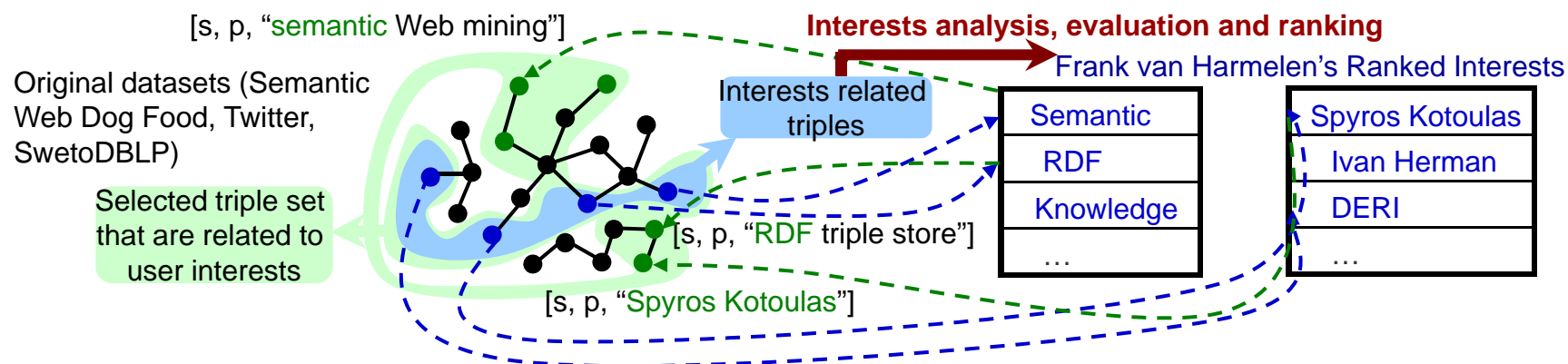
subject	predicate	object
<http://www.zurazine.com/tag/the-venice-film-festival/>	<http://purl.org/dc/terms/title>	"The Venice Film Festival Zurazine"
<http://www.zurazine.com/tag/the-venice-film-festival/>	<http://opengraphprotocol.org/schema/tbde>	→
<http://www.zurazine.com/tag/the-venice-film-festival/>	<http://opengraphprotocol.org/schema/site_name>	"Zurazine"
<http://www.zurazine.com/tag/the-venice-film-festival/>	<http://opengraphprotocol.org/schema/url>	"http://www.zurazine.com/2010/09/07/matale-portman-the-fairy-at-the-venice-film-festival/"
<http://www.zurazine.com/tag/the-venice-film-festival/>	<http://opengraphprotocol.org/schema/type>	"article"
<http://www.zurazine.com/tag/the-venice-film-festival/>	<http://www.facebook.com/2008/fbmlapp_id>	"11413965331228"

June, 2011: 12 Billion RDF Triples from the Web

"Linking Open Data cloud diagram, by Richard Cyganiak and Anja Jentzsch. <http://lod-cloud.net/>"

Personalization for Large scale and Web Enabled Semantic Data Processing (cont.)

- An illustration of the basic idea:



For more details:

- Yi Zeng, Erzhong Zhou, Yan Wang, Xu Ren, Yulin Qin, Zhisheng Huang, Ning Zhong. Research Interests : Their Dynamics, Structures and Applications in Unifying Search and Reasoning. Journal of Intelligent Information Systems, Volume 37, Number 1, 65-88, Springer, 2011.
- Yi Zeng, Ning Zhong, Yan Wang, Yulin Qin, Zhisheng Huang, Haiyan Zhou, Yiyu Yao, and Frank van Harmelen. User-centric Query Refinement and Processing Using Granularity Based Strategies. Knowledge and Information Systems, Volume 27, Number 3, 419-450, Springer, 2011.

Personalization for Large scale and Web Enabled Semantic Data Processing (cont.)

DBLP-SSE
[DBLP Search Support Engine]

AuthorName: Runhe Huang KeyWord: Intelligence

SelfInterest	Co Authors	Co Interests
1 System	1 Bernady O.	1 System
2 Service	2 Apduban	2 Network
3 Grid	3 Leonard Burilli	3 Model
4 Negotiation	4 Anthony Y. Chang	4 Service
5 Evolutionary	5 Shi-Kuo Chang	5 Ubiquitous
6 Ubiquitous	6 Vipin Chaudhary	6 Information
7 Agent	7 Yemee-Huei Chen	7 Grid
8 Smart	8 Jingde Cheng	8 Distributed
9 Model	9 Terence C. Fogarty	9 Design
	10 D. Frank Heu	

Choose Refinement: --Without Refined--

- Structured Intelligence.
- Artificial intelligence.
- On intelligence as memory.
- Rationality and Intelligence.
- Perceptual Intelligence.
- On Intelligence and Randomness.
- Mindless Intelligence.
- Ambient Intelligence.

[to see more](#)

Refine In Amazon Choose Refinement: --Without Refined--

- Emotional Intelligence: 10th Anniversary Edition, Why It Can Matter More Than IQ [to see more...](#)
- Emotional Intelligence 2.0 [to see more...](#)
- Primal Leadership: Realizing the Power of Emotional Intelligence [to see more...](#)
- The Mirror of Yoga: Awakening the Intelligence of Body and Mind [to see more...](#)
- Working with Emotional Intelligence [to see more...](#)
- Please Understand Me II: Temperament, Character, Intelligence [to see more...](#)
- Data Mining for Business Intelligence: Concepts, Techniques, and Applications in Microsoft Office Excel with XLMiner [to see more...](#)
- Social Intelligence: The New Science of Human Relationships [to see more...](#)
- Artificial Intelligence: A Modern Approach (3rd Edition) [to see more...](#)

The datasource is from the [DBLP project](#). DBLP-SSE now only supports Firefox and Chrome browsers.

SwetoDBLP dataset:
1.49x10⁷ RDF Triples

Name: Ricardo A. Baeza-Yates the [LASC Project](#)

Query : Intelligence

List 1 : without any refinement (top 7 results)

- PROLOG Programming for Artificial **Intelligence**, Second Edition.
- Artificial **Intelligence** Architectures for Composition and Performance Environment
- The Mechanization of **Intelligence** and the Human Aspects of Music.
- Artificial **Intelligence** in Music Education: A Critical Review.
- Readings in Music and Artificial **Intelligence**.
- Music, **Intelligence** and Artificiality.
- Regarding Music, Machines, **Intelligence** and the Brain: An Introduction to Music and AI.

List 2 : with user's own interests constraints (top 7 results)

interests : Web, Search, Distributed, Engine, Mining, Content, Query

- SWAMI: Searching the Web Using Agents with Mobility and **Intelligence**.
- Moving Target Search with **Intelligence**.
- Teaching Distributed Artificial **Intelligence** with RoboRally.
- Prototyping a Simple Layered Artificial **Intelligence** Engine for Computer Games.
- Web Data Mining for Predictive **Intelligence**.
- Content Analysis for Proactive **Intelligence**: Marshaling Frame Evidence.
- Efficient XML-to-SQL Query Translation: Where to Add the **Intelligence**?

List 3 : with group retained interests constraints (top 7 results)

interests : Search, Retrieval, Web, Information, System, Query, Analysis

- Moving Target Search with **Intelligence**.
- A New Swarm **Intelligence** Coordination Model Inspired by Collective Prey Retrieval and Its Application to Image Alignment.
- SWAMI: Searching the Web Using Agents with Mobility and **Intelligence**.
- Building an **information** on demand enterprise that integrates both operational and strategic business **intelligence**.
- An Explainable Artificial **Intelligence** System for Small-unit Tactical Behavior.
- Efficient XML-to-SQL Query Translation: Where to Add the **Intelligence**?
- Intelligence** Analysis through Text Mining.

Participants 7 DBLP authors:

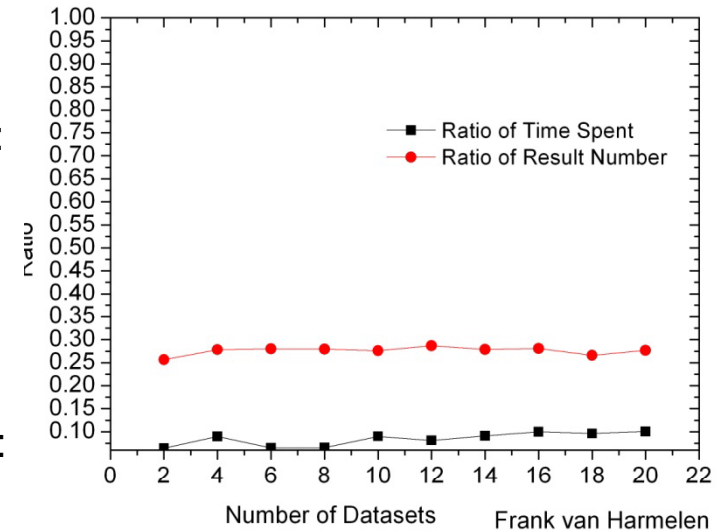
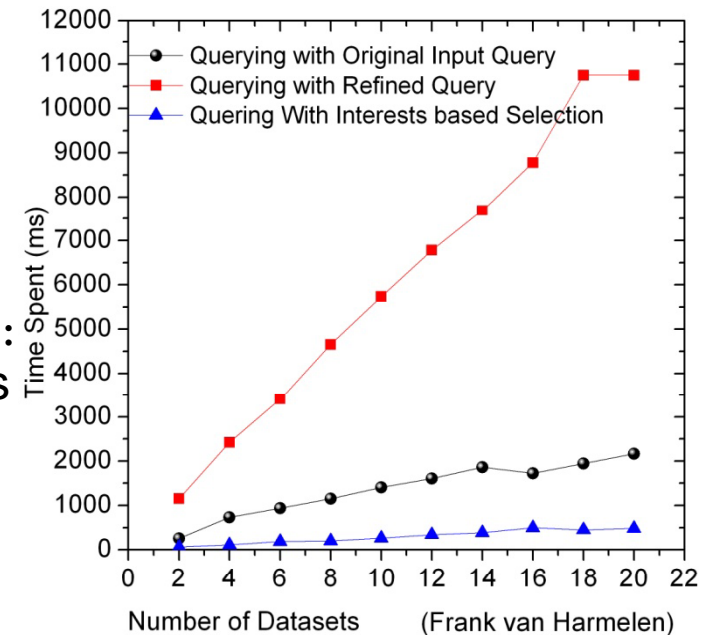
Preference order 100% :
List 2, List 3 □ *List 1*

Preference order 100% :
List 2 ≈ List 3

Preference order 83.3% :
List 2 > List 3 □ *List 1*

Preference order 16.7% :
List 3 > List 2 □ *List 1*

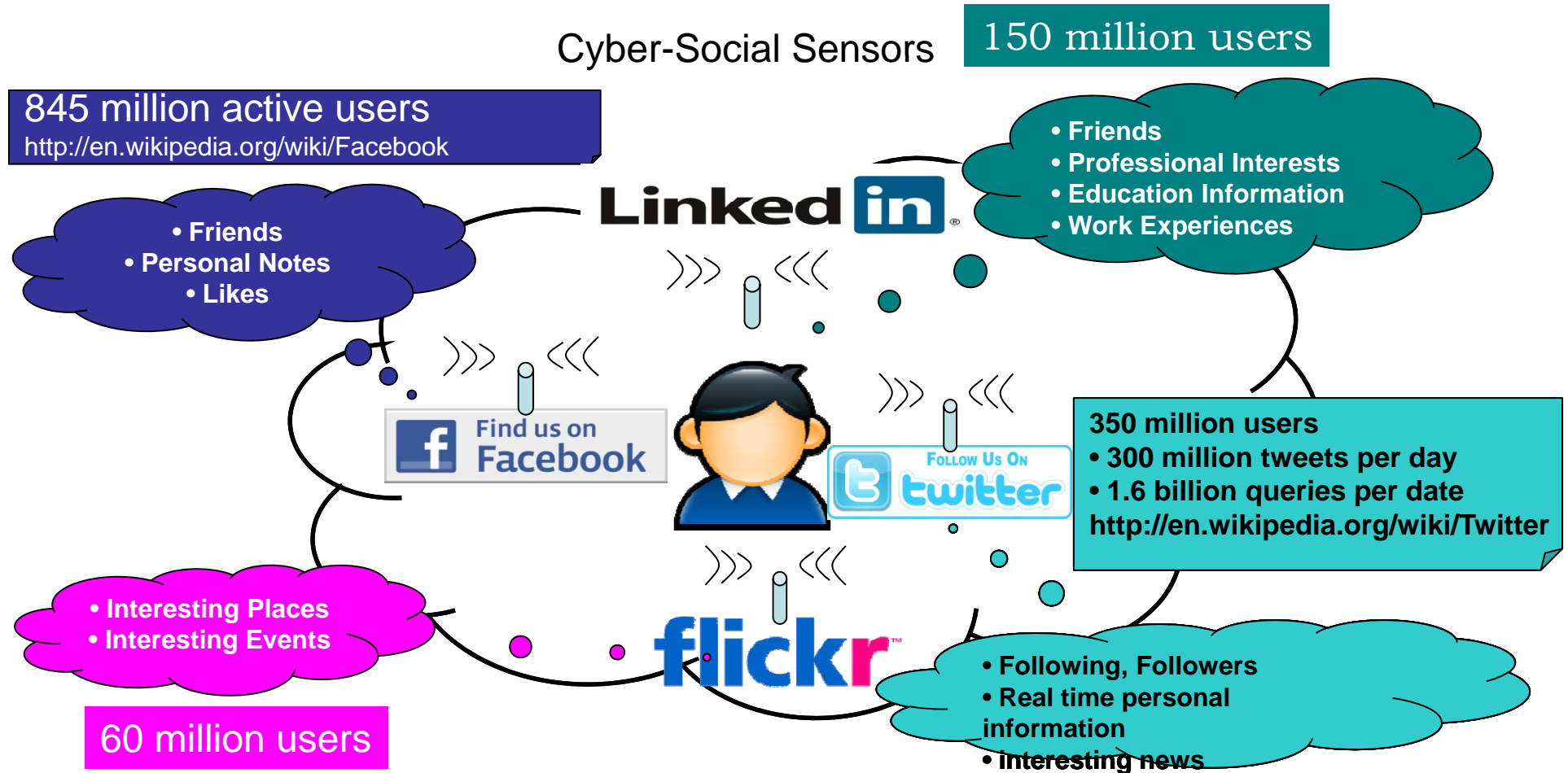
A Comparative Study of Query Time and Efficiency for Different Strategies



See references in the previous page

Massive Semantic Data from the Social Web

- The social Web platforms and the microblog platforms adopt and benefit from semantic techniques
- The semantic Web gets huge data from these Social Web platforms.



- From Web of Contents to Web of People
- Users play more and more important roles

Personal Interests Data Fusion Strategies

Weighted Fusion Strategy: $I(i) = \sum_{n=1}^m w_n \times I(i)_n$

- Average fusion strategy

$$w_n = 1/n$$

$$w_1 + w_2 + \dots + w_n = 1$$

- Time-sensitive fusion strategy

$$w_1 : w_2 : \dots : w_n = f_1 : f_2 : \dots : f_n$$

$$w_1 + w_2 + \dots + w_n = 1$$

Slides 7-10 are from our following paper:

Yunfei Ma, Yi Zeng, Xu Ren, and Ning Zhong. User Interest Modeling Based on Multi-source Personal Information Fusion and Semantic Reasoning. Proceedings of the 2011 International Conference on Active Media Technology, Lecture Notes in Computer Science 6890, 195-205, Springer, Lanzhou, China, September 7-9, 2011.

An Illustration of Multi-source Personal Interests Fusion

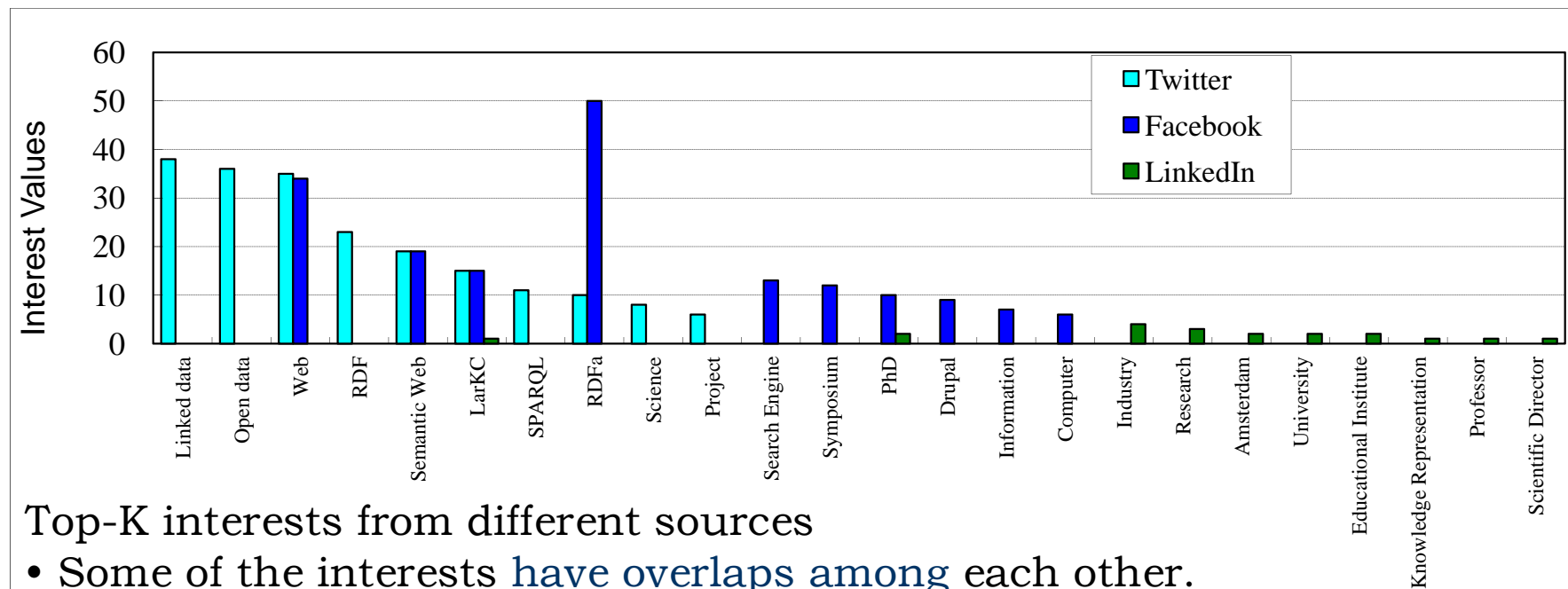
Evolution of Scientific Information Sharing ~~The New York Times~~

“Open Science” Challenges Journal Tradition with Web Collaboration



• User: Frank van Harmelen

• Data Source:



Top-K interests from different sources

- Some of the interests **have overlaps** among each other.
- **Diversities** among these Top-K interests are even more obvious.

A comparative study of interests from three single sources

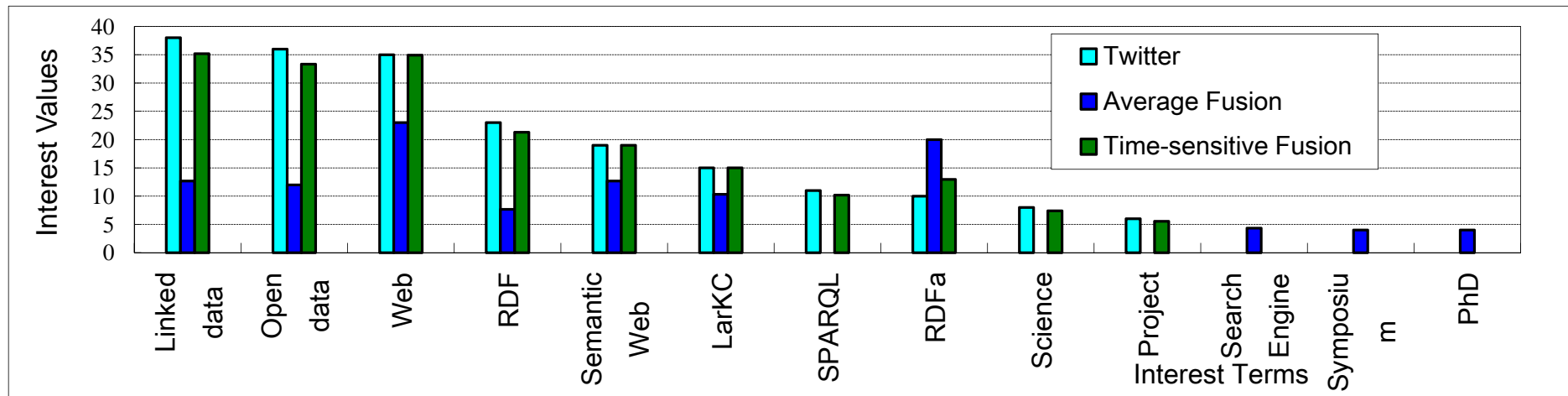
An Illustration of Multi-source Personal Interests Fusion

Update frequency:

Twitter: $f_1=2.5$, Facebook: $f_2=0.2$, LinkedIn: $f_3=0.0004$ (per day)

Weighted Interests Fusion Function:

$$I(i) = 0.9258 \times I(i)_1 + 0.0741 \times I(i)_2 + 0.0001 \times I(i)_3$$



A comparative study of interests from a single source and multiple interests sources

- **Average Fusion** : Twitter(7)、Facebook(7), LinkedIn(2)
- **Time Sensitive Fusion**:
 - (1) Top-10 overlaps with Twitter;
 - (2) Values are very close to the ones from Twitter, but entirely different;
 - (3) No interests from Facebook and LinkedIn.

Interests Representation and Reasoning about Interests

Interests Representation using e-FOAF:interest (<http://wiki.larkc.eu/e-foaf:interest>)

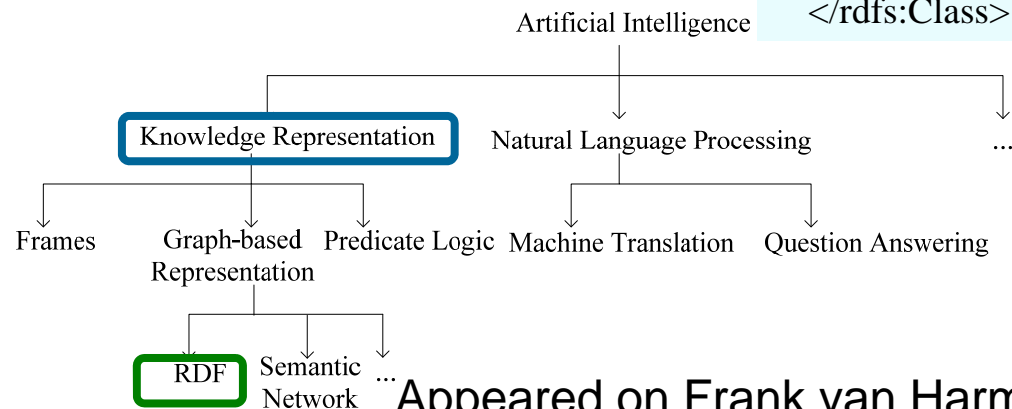
```
<foaf:Person rdf:about="http://www.cs.vu.nl/~frankh/">
  <foaf:name>Frank van Harmelen</foaf:name>
  <e-foaf:interest>
    <rdf:Description rdf:about="http://www.wici-lab.org/wici/wiki/index.php/RDF">
      <dc:title>RDF</dc:title>
      <e-foaf:cumulative_interest_value rdf:parseType="Resource">
        <rdf:value rdf:datatype="&xsd:number"> 21.293 </rdf:value>
      </e-foaf:cumulative_interest_value>
    </rdf:Description>
  </e-foaf:interest>
  ...
</foaf:Person>
```

Frank van Harmelen is interested in RDF in a certain degree

RDF representation of AI Ontology

```
<rdfs:Class rdf: ID="Graph-based Representation">
  <rdfs:subClassOf rdf: resource="Knowledge Representation"/>
</rdfs:Class>
<rdfs:Class rdf: ID="RDF">
  <rdfs:subClassOf rdf: resource="Graph-based Representation"/>
</rdfs:Class>
```

A Fragment of AI Ontology



Reasoning about interests from RDF to **Knowledge Representation**

Appeared on Frank van Harmelen's homepage, but not elsewhere.

Ranking Strategy for User Interests Related Sources



$$C(T, U) = \omega_s \sum_{p=1}^q S_p + \omega_i \sum_{n=1}^m N(i_n)$$

$$\omega_s + \omega_i = 1$$

$$N(i_n) = \frac{f(i_n)}{\sum_{n=1}^m f(i_n)}$$

Active Academic Visit Recommendation Application (AAVRA)



The upper snapshot is from <http://data.semanticweb.org/organization>

- Collaboration network is already too complex, but...
- Academic collaboration candidates not only appear on publication data, but also on many other social networking environment such as Twitter.
- AAVRA was proposed in the following publication [Zeng2012a], nevertheless, ranking strategies among different social network has not been investigated.

Data Sources for AAVRA:

Twitter Data, Semantic Web Dog Food data, DBLP data, Google Maps API

[Zeng2012a] Yi Zeng, Ning Zhong, Xu Ren and Yan Wang. User Interests Driven Web Personalization Based on Multiple Social Networks. Proceedings of the 4th International Workshop on Web Intelligence & Communities, collocated with the 2012 World Wide Web Conference (WWW 2012), Lyon, France, April 16th, 2012.

AAVRA: Data Acquisition

The image shows a screenshot of a Twitter profile for Frank van Harmelen (@FrankVanHarmele). The profile header includes a blue-bordered box around the name and handle, another around the bio, and a third around the 'Following' button. Statistics show 1,658 tweets, 47 following, and 1,215 followers. A 'Following' list on the left is also highlighted with a blue border, showing accounts like VU UC-IT, Lynda Hardman, FuturiCT, and Anna. The main tweets section features a blue-bordered box around a tweet from Frank van Harmelen dated 21 Mar, which discusses publishing data and includes a link to a blog. Below it is another tweet from the same user dated 2 Mar, mentioning Cray's RDF/graph processing engine. At the bottom, a tweet from Michael Hausenblas dated 29 Feb is shown, retweeted by Frank van Harmelen, and a tweet from Frank van Harmelen dated 1 Mar is partially visible.

Frank van Harmelen @FrankVanHarmele
AI Researcher at VU University Amsterdam, tweeting about Semantic Web issues. Working on LarKC, the Large Knowledge Collider, <http://www.larkc.eu>
Amsterdam · <http://www.cs.vu.nl/~frankh>

Following

- VU UC-IT @VU_UCIT
Het Universitair Centrum I (UC-IT) is de centrale IT-organisatie van de Universiteit.
- Lynda Hardman @lynda_h
Watching the virtual inform around us develop faster than it.
- FuturiCT @FuturiCT
- Anna @AnnavanHarmelen

Tweets

Frank van Harmelen @FrankVanHarmele 21 Mar
"It's one thing just to publish data, quite another if you want folk to use it.". Excellent blog on displaying LOD blog.ouseful.info/2012/02/29/mor...

Frank van Harmelen @FrankVanHarmele 2 Mar
Well informed piece in The Register on Cray's RDF/graph processing engine: theregister.co.uk/2012/03/01/cra... (anybody got any spare cash?)

Michael Hausenblas @mhausenblas 29 Feb
RT @latcproject: worldbank.270a.info World Bank Linked Data by @csarven #linkeddata #statistics #economy
Retweeted by Frank van Harmelen

Frank van Harmelen @FrankVanHarmele 1 Mar
Cray moving into large RDF-graph processing: investors.cray.com/phoenix.zhtml?... "inferencing, querying and visualization" yarcddata.com/products.html

Twitter data acquisition

Twitter data acquisition to :

- Locate the end user;
- Find agents that the end user follows;
- User real time interests analysis;
- Locating followings and their interests

AAVRA: Data Acquisition from SWDF

Semantic Web Dog Food

Home

Search this site: Search

Browse

- Papers
- People
- Organisations
- Conferences
- Workshops

Frank van Harmelen

Homepage: <http://www.cs.vu.nl/~frankh>

Homepage: <http://www.cs.vu.nl/~frank.van.harmelen>

Affiliation: Vrije Universiteit Amsterdam (at ESWC2007, ESWC2010, ISWC2009, ISWC2010, ISWC2011, LISC2011, NatuReS2008, OrdRing2011, WWW2007, WWW2010)

```
SELECT DISTINCT $person $person_name $affiliation $affiliation_name
WHERE {
  $person a foaf:Person.
  $person foaf:name $person_name.
  $person foaf:made $InProceedings.
  $InProceedings foaf:maker $person_url.
  $person_url foaf:name "Frank van Harmelen".
  $person swrc:affiliation $affiliation.
  $affiliation foaf:name $affiliation_name
}
```

Presented at: *7th Extended Semantic Web Conference (ESWC2010)*

by [Jacopo Urbani](#), [Spyros Kotoulas](#), [Jason Maassen](#), [Frank van Harmelen](#), [Henri Bal](#)

赞 注册去看看朋友们都喜欢什么。

In previous work we have shown that the MapReduce framework for distributed computation can be deployed for highly scalable inference over RDF graphs under the RDF Schema semantics. Unfortunately, several key optimizations that enabled the scalable RDFS inference do not generalize to the richer OWL semantics. In this paper we analyze these problems, and we propose solutions to overcome them. Our solutions allow

Ranking for AAVRA Data Sources



dblp.uni-trier.de
Computer Science
Bibliography

2010	
137	Incopa Urbani, Spyros Kotoulas, Jason Maassen, Frank van Harmelen, Marco De Bellis: OWL Reasoning with WebPIE: Calculating the Closure of 100 Billion Triples. <i>ESWC (1) 2010</i> : 213-227
136	Christophe Guéret, Paul T. Groth, Frank van Harmelen, Stefan Schlobach: Finding the Achilles Heel of the Web of Data: Using Network Analysis for Link-Recommendation. <i>International Semantic Web Conference (1) 2010</i> : 289-304
135	Rinke Hoekstra, Arno R. Lodder, Frank van Harmelen: Case Frames as Contextual Mappings to Case Law in BestPortal. <i>JURIX 2010</i> : 77-86
134	Gaston Tagni, Stefan Schlobach, Annette ten Teije, Frank van Harmelen, Giorgios Karafotias: A Workbench for Anytime Reasoning by Ontology Approximation - With a case study on instance retrieval. <i>STAIRS 2010</i> : 328-340
133	Spyros Kotoulas, Eval Oren, Frank van Harmelen: Mind the data skew: distributed inferencing by speeddating in elastic regions. <i>WWW 2010</i> : 531-540
132	Frank van Harmelen, Andreas Kuzig, Pascal Hitzler, Guillin Qi: Preface - Special issue on commonsense reasoning for the Semantic Web. <i>Ann. Math. Artif. Intell.</i> 53(1-2): 1-2 (2010)
131	Pascal Hitzler, Frank van Harmelen: A reasonable Semantic Web. <i>Semantic Web 1(1-2)</i> : 39-44 (2010)

$$C(T, U) = \omega_s \sum_{p=1}^q S_p + \omega_i \sum_{n=1}^m N(in)$$

$$\omega_s + \omega_i = 1$$

$$N(in) = \frac{f(in)}{\sum_{n=1}^m f(in)}$$

The following publications of Frank van Harmelen are available:

- Media, Politics, and the Semantic Web: An experience report in advanced RDF usage (at ESWC2007)
- OWL reasoning with MapReduce: calculating the closure of 100 billion triples (at ESWC2010)
- Using Semantic Distances for Reasoning with Inconsistent Ontologies (at ISWC2008)
- Scalable Distributed Reasoning using MapReduce (at ISWC2009)
- Finding the Achilles Heel of the Web of Data: using network analysis for link-recommendation (at ISWC2010)
- QueryPIE: Backward reasoning for OWL Horst over very large knowledge bases (at ISWC2011)
- Using Google Distance to weight approximate ontology matches (at WWW2010)
- Mind the data skew: Distributed inferencing by speeddating in elastic regions (at WWW2010)



Frank van Harmelen @FrankVanHarme

Impressive Semantic Web adoption: webnodes.com/who-uses-seman...

3月12日



Frank van Harmelen @FrankVanHarme

"It's one thing just to publish data, quite another if you want folk to use it." Excellent blog on displaying LOD blog.ouseful.info/2012/02/29/mor...

3月2日

2011.11-2012.3



Frank van Harmelen @FrankVanHarme

Well informed piece in The Register on Cray's RDF/graph processing engine: theregister.co.uk/2012/03/01/cra... (anybody got any spare cash?)

3月2日

$$m = 10, \omega_s = \omega_i = 0.5$$

$$C(\text{SWDF}, \text{DBLP}) = 0.5 \cdot (0.105 + 0.105) + 0.5 \cdot 8 = 4.105$$

$$C(\text{Twitter}, \text{DBLP}) = 0.5 \cdot 0.167 = 0.0835$$

$$R(\text{SWDF}) < R(\text{Twitter})$$

Ranking for AAVRA Data Sources (Frank as an example)

Target Data source	Interests	Values	Compared Data Source	Interests	Values	$N(i_n)$	Compared Data Source	Interests	Values	$N(i_n)$
DBLP	Semantic	21	SWDF	reasoning	4	0.211	Twitter	Data	11	0.262
	Knowledge	17		OWL	2	0.105		Semantic	7	0.167
	RDF	9		Semantic	2	0.105		Web	5	0.119
	Ontology	9		Web	2	0.105		Open	4	0.095
	Language	9		MapReduce	2	0.105		people	3	0.071
	Approximate	6		Distributed	2	0.105		Linked	3	0.071
	Formal	6		ontology	2	0.105		online	3	0.071
	Information	6		Inconsistent	1	0.053		Microdata	2	0.048
	Modelling	5		speeddating	1	0.053		RDFa	2	0.048
	Peer-to-Peer	5		bases	1	0.053		simulate	2	0.048
Comparison		Shared Data Sources								
SWDF and DBLP		ESWC2007, ESWC2010, ISWC2008, ISWC2009, ISWC2010, ISWC2011, WWW2007, WWW2010								
Twitter and DBLP		None								

Ranking for AAVRA Data Sources (Peter as an example)

Target Data source	Interests	Values	Compared Data Source	Interests	Values	$N(i_n)$	Compared Data Source	Interests	Values	$N(i_n)$
DBLP	Semantic	30	SWDF	Data	2	0.154	Twitter	Semantic	25	0.301
	Web	24		Object	2	0.154		Yahoo!	10	0.120
	Search	8		Web	2	0.077		Web	12	0.145
	Social	8		Entity	1	0.077		RDFa	8	0.096
	Network	7		Query	1	0.077		Schema.org	8	0.096
	Ontology	4		RDF	1	0.077		Data	6	0.072
	Technology	4		Retrieval	1	0.077		Search	6	0.072
	Analysis	3		Search	1	0.077		Evaluation	3	0.036
	Entity	3		Semantic	1	0.077		SPARQL	3	0.036
	Model	3		Twitter	1	0.077		Entity	2	0.024
Comparison		Shared Data Sources								
SWDF and DBLP		ISWC2009, ISWC2010, ISWC2011, WWW2010								
Twitter and DBLP		None								

AAVRA: Generating Levels of Recommendation

Interpretations on different groups of data from SWDF and Twitter

Interest Levels	Formula	Result Sets
1	$Coauthors_{SWDF}(p, u) \wedge TFin g(u, p)$	T_1
2	$Coauthors_{SWDF}(p, u) \wedge \neg TFin g(u, p)$	T_2
3	$TFin g(u, p) \wedge P Coauthors_{SWDF}(p, u) \wedge Retweet(u, p)$	T_3
4	$TFin g(u, p) \wedge P Coauthors_{SWDF}(p, u) \wedge \neg Retweet(u, p)$	T_4
5	$TFin g(u, p) \wedge SIT(p, u, K) \wedge \neg SWDF(p)$	T_5
6	$TFin g(u, p) \wedge \neg SIT(p, u, K) \wedge \neg SWDF(p)$	T_6

AAVRA: Recommendation Results Analysis (for Frank van Harmelen)

Interest Level	Recommendation Ratio(%)	Results Examples
1	0.014	Paul Groth
2	0.210	Spyros Kotoulas(3), Jacopo Urbani(3), Eyal Oren(2), Henri Bal(2), Zharko Aleksovski(2), Zhisheng Huang(1),...
3	0.154	Kalina Bontcheva, Lynda Hardman, Peter Mika, Steffen Staab, Denny Vrandecic, Ivan Herman, Michael Hausenblas, ...
4	0.505	Stefano Bertolo, Dan Brickley, DERI Galway, Web Foundation, Ontotext AD...

Recommendation Ratio = Recommended Results / Problem Space

Problem Space: 7131 persons (SWDF+Twitter)

Calculation of $SIT(p, u, K)$, Top-10 interests, $K=1$




0.8835% candidates are recommended overall.

Active Academic Visit Recommendation: A Snapshot for Frank van Harmelen




powered by
LARKG


Active Academic Visit Recommendation Application (AVRAA)

Recommending Friends to Visit

-  Level 1: Coauthors [SWDF]
-  Level 2: Potential Collaborators (SWDF authors and Twitter Following) [SWDF+Twitter]
-  Level 3: Potential Collaborators that have similar interests based on Twitter Following and tweets [Twitter]

Data Sets




Kalina Bontcheva
@kbontcheva

Senior researcher on information extraction, text mining, semantic annotation, text analytics, ontologies
UK · <http://gate.ac.uk/kalina>

Followed by [Frank van Harmelen](#) and [Michael Witbrock](#).

Target Place:

Recommendation Visualization



Recommendation List

- [Frank van Harmelen\(SWDF\)](#)
- [Frank van-Harmelen\(SWDF\)](#)
- [Frank Van Harmelen\(SWDF\)](#)
- [Zhisheng Huang\(SWDF\)](#)
- [Zharko Aleksovski\(SWDF\)](#)
- [Christophe Gueret\(SWDF\)](#)
- [Paul Groth\(SWDF\)](#)
- [Lora Arovo\(SWDF\)](#)
- [Dan Brickley\(SWDF\)](#)
- [Rinke Hoekstra\(SWDF\)](#)
- [Richard Cyganiak\(SWDF\)](#)
- [Michael Hausenblas\(SWDF\)](#)
- [Kalina Bontcheva\(SWDF\)](#)
- [Lynda Hardman\(SWDF\)](#)
- [Peter Mika\(SWDF\)](#)
- [Peter Mika\(Twitter\)](#)
- [Richard McClatchey\(SWDF\)](#)
- [Richard Cyganiak\(SWDF\)](#)
- [Steffen Staab\(SWDF\)](#)
- [Tom Heath\(SWDF\)](#)
- [Michael Witbrock\(SWDF\)](#)
- [Tom Heath\(SWDF\)](#)
- [Denny Vrandečić\(SWDF\)](#)
- [Denny Vrandečić\(SWDF\)](#)

Recommendation: $TFing(u, p) \wedge PCoauthor_{SWDF}(p, u)$

- University of Sheffield (Kalina Bontcheva)
- University of the West of England (Richard McClatchey)

AAVRA: Recommendation Results Analysis (for Peter Mika)

Levels	Recommendation Ratio(%)	Results Examples
1	0	Null
2	0.066	Edgar Meij, Hugo Zaragoza, Jeffrey Pound, David Laniado, Sebastiano Vigna, ...
3	0.066	Michael Hausenblas, Tom Heath, Frank van Harmelen, Juan Sequeda, Dan Brickley,...
4	0.498	Andreas Harth, Denny Vrandecic, Richard Cyganiak, Uldis Bojars, ...
5	0.055	Manu Sporny, Elizabeth Windsor, Nick Cox, St' ephane Corlosquet, ... (K=1 in $SIT(p, u, K)$)

Recommendation Ratio = Recommended Results / Problem Space

Problem Space: 9039 persons (SWDF+Twitter)

Calculation of $SIT(p, u, K)$, Top-10 interests, K=1




0.686% candidates are recommended overall.

Active Academic Visit Recommendation: A Snapshot for Peter Mika



powered by
LARKG


Active Academic Visit Recommendation Application (AVRAA)

Recommending Friends to Visit

-  **Level 1:** Coauthors [SWDF]
-  **Level 2:** Potential Collaborators (SWDF authors and Twitter Following) [SWDF+Twitter]
-  **Level 3:** Potential Collaborators that have similar interests based on Twitter Following and tweets [Twitter]

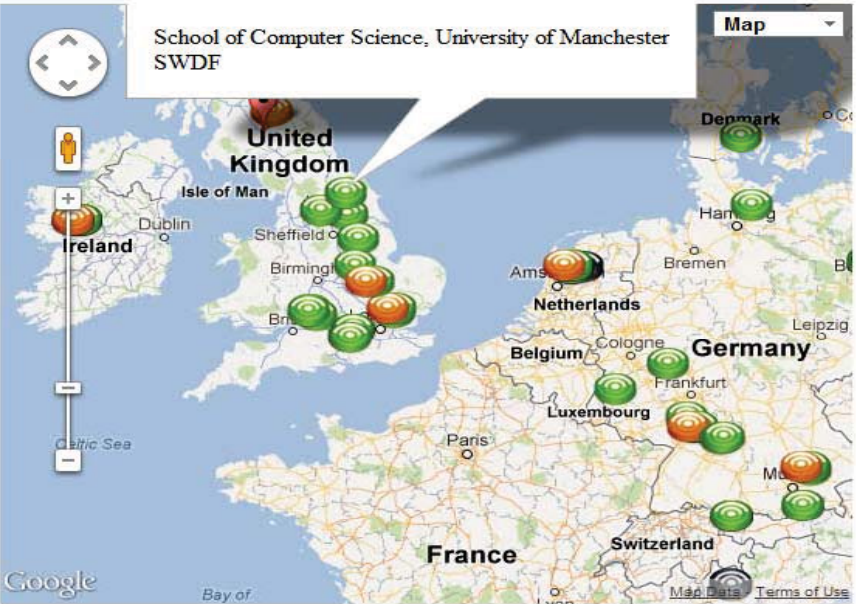
Data Sets



Target Place:

Recommendation Visualization



Recommendations

- [Edgar Meij\(SWDF\)](#)
- [Peter Mika\(SWDF\)](#)
- [Hugo Zaragoza \(SWDF\)](#)
- [Hugo Zaragoza \(SWDF\)](#)
- [Jeffrey Pound\(SWDF\)](#)
- [David Laniado\(SWDF\)](#)
- [Sebastiano Vigna \(SWDF\)](#)
- [Andreas Harth\(SWDF\)](#)
- [Denny Vrandecic \(SWDF\)](#)
- [Andreas Harth\(SWDF\)](#)
- [Richard Cyganiak \(SWDF\)](#)
- [Uldis Bojars\(SWDF\)](#)
- [John Breslin\(SWDF\)](#)
- [Axel Polleres\(SWDF\)](#)
- [Brian Davis\(SWDF\)](#)
- [Michael Hausenblas \(SWDF\)](#)
- [Alexandre Passant \(SWDF\)](#)
- [Lin Clark\(SWDF\)](#)
- [Oscar Corcho\(SWDF\)](#)
- [Andreas Harth\(SWDF\)](#)
- [Denny Vrandecic](#)

Recommendation: $TFing(u, p) \wedge PCoauthor_{SWDF}(p, u)$

University of Manchester (Andreas Harth)
University of London (Yves Raimond)

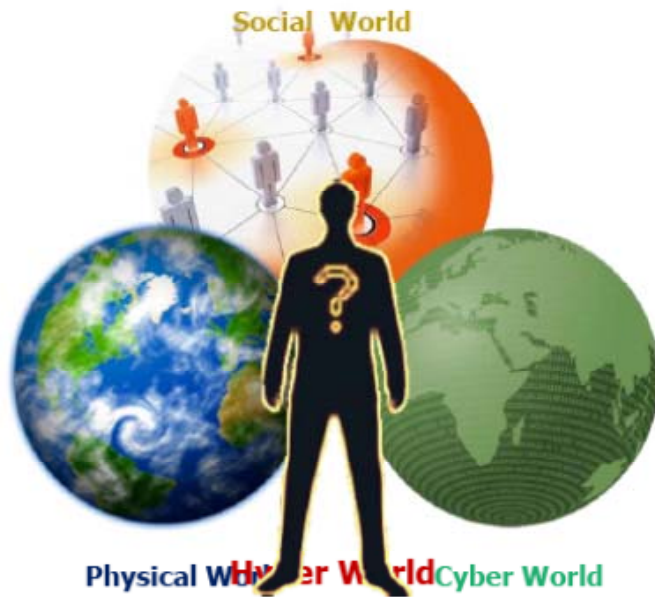
Into the Future



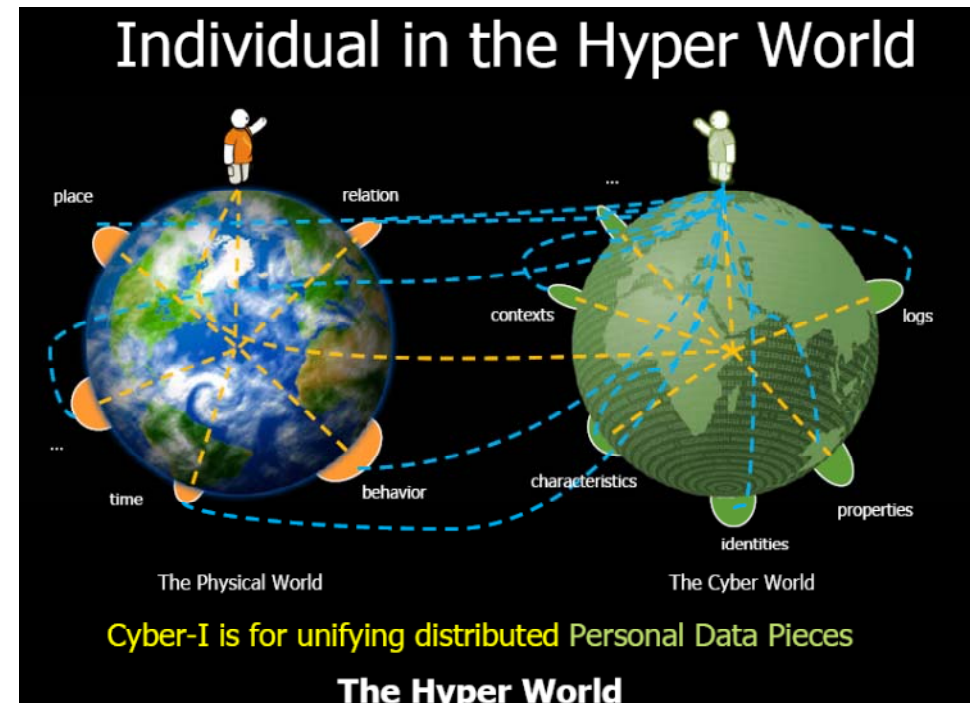
A conservative estimate would be that it would take 10,000 triples just to describe each human, which gives us 100 trillion (10^{14}).

IEEE Internet Computing
Unifying Reasoning and Search to Web Scale
Dieter Fensel • University of Innsbruck, Austria
Frank van Harmelen • Vrije Universiteit Amsterdam

 **delicious** →



What about **Existence, Extension and Essential** of Human in the Hyper World?



Pictures from Prof. Ning Zhong's plenary talk at Web Intelligence 2011

Thank You!