Ontology Summit 2018: Context of Contexts

Launch for Track 4:
"Contexts in the Open Knowledge Network"

“Big data makes common schemas even more necessary.”

Champions: Gary Berg-Cross & Ram D. Sriram

Ontolog NIST

Presented by Gary Berg-Cross

1/18/2018
Motivation: Beyond Text & Towards an Era of Open Knowledge

Context of where we find ourselves:

1. Entity-oriented knowledge bases in the form of “graphs” now seem ubiquitous
2. More structured “knowledge” is in personal assistants & consumer/search Apps
3. Various companies have a version of a Knowledge Graph

But they are private and thus maybe hard to extend for other uses.

Action: Making them “open” might encourage innovation & design exploration

Additional motivation: We can develop public Knowledge Graphs and Apps for broader, social use.

See: Open Knowledge Network, A.W. Moore & R.V. Guha
The Q: Can we expand the use of knowledge graphs to build a large, open KB for diverse public applications?

For Google a Knowledge Graph is a (simple) systematic way of putting millions of pieces of data about facts, people and places starting with keywords to create interconnected search results that are reasonably accurate and relevant. But can this be easily extended to do things like answer Qs?
3rd Workshop on an Open Knowledge Network: Enabling the Community to Build the Network

OKN Presentations (http://ichs.ucsf.edu/okn-documents/)

1. Open Knowledge Network, Andrew W. Moore, Ramanathan V. Guha
2. Knowledge Networks in Biomedicine, Sergio E Baranzini, University of CA
3. Manufacturing, Barry Smith
4. Open Knowledge Networks for Geosciences, Sustainability, & Convergent Research in Natural-Human Systems, Yolanda Gil, U of Southern California
5. Reflections on Data Science for Finance (Dsfin), Louiqa Raschid
7. Role of NIST in Realizing OKN, Ram D. Sriram, NIST

Breakout Session Reports

1. Biomedicine Breakout Report, Stan Ahalt, Rafael Gocalves, Susan Gregurick, Charlotte Nelson, Dexter Pratt, Michael Witbrock
4. Manufacturing Breakout Report, various workshop participants
Mission Statement/Topics

The objective of this Ontology Summit 2018 track is to explore the realm of open, machine readable, knowledge beyond factoids but including the role of context.

This involves the understand the status & direction of:

• coordinated work on Open (Public), cataloged knowledge

• creating and using Knowledge Graphs and

• associated efforts like
  – lighter semantics which things like schema.org provide
  – an open basis for massive online knowledge suitable for social-good applications.

But...given that knowledge will involve/apply to different contexts, different knowledge graphs and portions thereof will be evoked.

How is this/will this be addressed?
Approach / Track Plan

• We have enlisting a variety of practitioners to discuss OKN, its application issues and challenges, and present their efforts and experiences and to stimulate forum discussion within the broader Ontology Summit community.

• We reference/build on past Ontology Summits (for example, the work on AI, knowledge reuse and IoT) as well as connect to other tracks as part of the Summit.

• Promote discussion of track session topics on the Ontolog/Summit forum both before and after sessions and leading up to the face-to-face meeting.

• Work with our speakers and the attending community to distill the virtual meeting topics to a useful “synthesis” and set up material for the face-to-face Symposium and Communique.

• Help draft material for the final communique.
Sessions Plan

Session 1 – 14, Feb 2018 Provide the Basics on OKN

Speakers:

1. Ramanthan Guha: OKN Overview
2. Mayank Kejriwal (ISI) Social uses of knowledge graphs
3. Vicki Tardif Holland (Google) Schema.org for OKN ....

Session 2 – 28, March 2018 Consider the role of Context

Speakers (preliminary):

1. Charles Klein (or someone from CycCorp) to discuss context & the use of microtheories in Cyc.
2. Vinh Nguyen (Kno.e.sis Center, Wright State University) “Semantic Web foundation on representing, reasoning and traversing Contextual Knowledge Graphs” and
3. Amit Sheth (Kno.e.sis Center): Evolving a Health KG.

Forum/Email conversations as needed to flesh out possible alternative approaches
Example of Issues

1. What knowledge do we need to support this vision?
2. What would be the nature of these Kbs and their Knowledge representation
3. What is the nature of the k-graph & how axiom-rich (formal) would these KBs be?
4. Can we/should we build on Schema.org or the like?
5. What quality ontologies are available as part of this effort?
6. What supporting technologies do we need, including use of rapidly advancing Machine learning (ML) technology which may help in extracting, and developing public knowledge bases from a variety of forms.
7. How do manage and maintain KBs of open knowledge as we leverage new input and related sources of informal information such as metadata annotation?
8. How to handle big, noisy data for portions of reality described in many contexts?
9. How do we handle fitness for many uses in many different contexts?......
   (more issues considering those raised by other Summit sessions...)

Open Knowledge Network
Preliminary References


3. Open Knowledge Network, A.W. Moore & R.V. Guha

4. Andrew Moore on "TOKeN: The Open Knowledge Network"
   https://www.youtube.com/watch?v=2cEUKKJoAdU

5. Schema.org: Evolution of Structured Data on the Web,
   http://queue.acm.org/detail.cfm?id=2857276

   https://uknowledge.uky.edu/cgi/viewcontent.cgi?article=1003&context=ccs2

Additional References

- Enterprise Knowledge Graph: An Introduction, Jose Manuel Gomez-Perez, Jeff Z. Pan, Guido Vetere and Honghan W
  http://www.springer.com/cda/content/document/cda_downloaddocument/9783319456522-c1.pdf?SGWID=0-0-45-1600415-p180215810

- Logical Inferences with Contexts of RDF Triples. Vinh Nguyen, Amit Sheth
  https://arxiv.org/pdf/1701.05724

- Context is Highly Contextual!, Amit P. Sheth,

