Semantic Web Visualization

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DIG Seminar
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Outline

• Why is Semantic Web visualization hard?
• What are the methods that have been used for viewing Semantic Web data?
• What lessons have been learned so far?
• Discussion: How can we use those lessons to make a better browsing experience?
Issues viewing the Semantic Web

• Irrelevant data
  – Family photographs when you want a business card

• Redundant data
  – Given Name, Family Name, Name

• Display and Layout
  – No layout information
  – Bad labels or even no labels
Circles And Arrows

- True graph representation
- Interesting with small datasets with relatively few branches.
- Very poor for most Semantic Web-scale datasets.
Isaviz
Haystack
Data Tables and Mashups

- Well-suited for displaying property-value pairs
  - Less cluttered than circles and arrows
- Allows users to navigate the graph
- At times, data table is almost too generic
  - Try to solve with domain-specific mashups
Tabulator
Tabulator

The Tabulator Project testDataset
The Tabulator Project testDataset mentions ColorPicture
ColorPicture is type of

ColorPicture is type of approxLocation
(42.1488976478, -72.00742006289996)
Tabulator

The reason Betty rejects Bob's request is non-compliant with MA Disability Discrimination Policy is because:

Bobsrequest is denied based on health information contained in xphone record 2892. Under the MA Disability Discrimination Law it is illegal to use health information to deny a service request.

The requester, Bob Same, resides in MA and is covered by the MA Disability Discrimination Law

Bob Same's request, Bobsrequest, was refused because of xphone record 2892

Premises:

<table>
<thead>
<tr>
<th>Customer</th>
<th>Reason</th>
<th>Type</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>customer351</td>
<td>reason</td>
<td>receiver</td>
<td>xphone record 2892</td>
</tr>
<tr>
<td></td>
<td></td>
<td>reply to</td>
<td>customer351</td>
</tr>
<tr>
<td></td>
<td></td>
<td>type</td>
<td>Bobsrequest</td>
</tr>
<tr>
<td></td>
<td></td>
<td>name</td>
<td>Refuse Request</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bob Same</td>
</tr>
</tbody>
</table>
OpenLink RDF Browser

Data Source URI


Categories

Bookmarks

Filters

No filters are selected. Create some by clicking on values in Categories you want to view.

Navigator | Browser | Raw triples | SVG Graph | Yahoo Map | Timeline | Images | Tag Cloud

This module is used to navigate through locally cached data, one resource at a time. Note that filters are not applied here.

Click on a Data Entity to explore its Linked Data Web.

- **Person**
  - Mr
  - 14 properties
  - 16 values

- **Point**
  - #b1023385194
  - 4 properties
  - 4 values

- **RSAPublicKey**
  - #b1023385195
  - 4 properties
  - 4 values

- **[Is Referenced By]**
  - #b1023385196
  - 2 properties
  - 2 values
  - #b1023385197
  - 2 properties
  - 2 values
Faceted Browsing

- Allow users to filter data on the fly
- Very good for closed datasets
- More confusing for large datasets
Magnetic-field-induced antiferromagnetism in the Kondo lattice

Description

Ph.D.
Includes bibliographical references (p. 109-111).
The half-filled Kondo lattice model, augmented by a Zeeman term, serves as a useful model of a Kondo insulator in an applied magnetic field. A variational mean field analysis of this system on a square lattice, backed up by quantum Monte Carlo calculations, reveals an interesting separation of magnetic field scales. For Zeeman energy comparable to the Kondo energy, the spin gap closes and the system develops transverse staggered magnetic order. The charge gap, however, remains robust up to a higher hybridization energy scale, at which point the canted antiferromagnetism is exponentially suppressed and the system crosses over to a nearly-metallic regime. The quantum Monte Carlo simulations are performed using a determinant Monte Carlo method that has been extended to handle mixed spin and fermionic degrees of freedom. The formulation is sign-problem-free for all values of the Kondo coupling and magnetic field strength. The matrix operations are specially organized to maintain numerical stability down to arbitrarily low temperatures. Spectral data is extracted from the imaginary-time correlation functions using an improved analytic continuation technique. The weak, secondary peaks of the single-electron spectral function are resolvable, and their response to the magnetic field is carefully tracked. An unusual rearrangement of spectral weight is found at the onset of the antiferromagnetism.

by Kevin Stuart David Beach.

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Show Referers
Longwell
Exhibit
Exhibit
What makes a SW Browser “Good”?  

- Easy deployment?  
- Pretty visualizations?  
- Minimal *required* Semantic Web knowledge?  
- Ease of data generation?  
- Discussion: How can you do all of these things while still guaranteeing that data is usable on the Semantic Web?
Links

• Circle and Arrow:
  – IsaViz http://www.w3.org/2001/11/IsaViz/
  – Welkin http://simile.mit.edu/welkin/

• Data Table / Mashup:
  – Disco http://www4.wiwiss.fu-berlin.de/bizer/ng4j/disco/
  – OpenLink RDF Browser
  – Sig.ma http://sig.ma/

• Faceted Browsing:
  – /facet http://slashfacet.semanticweb.org/
  – mSpace http://mspace.fm/
  – Exhibit http://www.simile-widgets.org/exhibit/
  – Longwell http://simile.mit.edu/wiki/Longwell