Artificial Intelligence Techniques

Internet Applications 2
Aims of the session

- What are Microdata
- Are they useful?
- Introduce the concept of Semantic Web
- semantic web with ‘small s’
- Internal research.
Microdata

- A way putting meaning (semantics) within existing web content.

HTML5’s Best-Kept Secret

<section itemscope itemtype="http://data-vocabulary.org/Person">
  <dd itemprop="name">Scott Turner</dd>
  <dd itemprop="title">Senior Lecturer</dd>
  <dd itemprop="affiliation">University of Northampton</dd>
  <dd itemprop="address" itemscope itemtype="http://data-vocabulary.org/Address">
    <span itemprop="street-address">Avenue Campus</span>
    <span itemprop="locality">Northampton</span>,
    <span itemprop="region">Northamptonshire</span>
    <span itemprop="postal-code">NN2 6JB</span>
    <span itemprop="country-name">UK</span>
  </dd>
</section>
This says the section describes a Person.
<dd itemprop="name">Scott Turner</dd>

- Each property of Person is itemprop – In this case the name of the person.
<dd itemprop="address" itemscope itemtype="http://data-vocabulary.org/Address">
  <span itemprop="street-address">Avenue Campus</span>
  <br />
  <span itemprop="locality">Northampton</span>,
  <span itemprop="region">Northamptonshire</span>
  <span itemprop="postal-code">NN2 6JB</span>
  <span itemprop="country-name">UK</span>
</dd>
Further reading

- http://support.google.com/webmasters/bin/answer.py?hl=en&answer=99170&topic=21997&ctx=topic
Other approaches
Microformats

- `<div id="hcard-Scott-J-Turner" class="vcard">
-   <span class="fn n">
      <span class="given-name">Scott</span><span class="additional-name">J</span><span class="family-name">Turner</span>
   </span>
-   <div class="org">University of Northampton</div>
-   <div class="adr">
      <div class="street-address">St Georges Avenue</div>
      <span class="locality">Northampton</span>,
      <span class="region">Northamptonshire</span>,
      <span class="postal-code">NN2 6JD</span>
      <span class="country-name">U.K</span>
   </div>
-   <div class="tel">+44 1604 893028</div>
</div>`
Examples

- hCard: for marking up contact information.
- hCalendar: Marking up event information.
- XFN: Marking up relationships between people.
- Hreview: Marking up reviews.
  <rdf:Description rdf:about="http://www.computing.northampton.ac.uk">
    <dc:title>Scott Turner</dc:title>
    <dc:publisher>University of Northampton</dc:publisher>
  </rdf:Description>
</rdf:RDF>
RDFa

- RDFa, provides a set of XHTML attributes to augment visual data with machine-readable hints
<rdf:RDF
    xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
    xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
    xmlns:foaf="http://xmlns.com/foaf/0.1/"
    <foaf:PersonalProfileDocument rdf:about=""/>
    <foaf:maker rdf:resource="#me"/>
    <foaf:primaryTopic rdf:resource="#me"/>
    </foaf:PersonalProfileDocument>
    <foaf:Person rdf:ID="me">
    <foaf:name>Scott Turner</foaf:name>
    <foaf:title>Dr</foaf:title>
    <foaf:givenname>Scott</foaf:givenname>
    <foaf:family_name>Turner</foaf:family_name>
    <foaf:mbox_sha1sum>a8428e44d03b8fe2bd3f7860d7d64d229ad71169</foaf:mbox_sha1sum>
    <foaf:homepage rdf:resource="http://www.computing.northampton.ac.uk/~scott"/>
    <foaf:workplaceHomepage rdf:resource="http://www.computing.northampton.ac.uk/~scott"/>
    </foaf:Person>
    </rdf:RDF>
Agents

- This is has been argued is the real power of the power of semantic web to produce machine-readable Web-content.
- Programs collating information form diverse sources.
Definition

“The **Semantic Web** is a project to create a universal medium for information exchange by putting documents with **computer-processable meaning (semantics)** on the **World Wide Web**. Currently under the direction of the Web's creator, **Tim Berners-Lee** of the **World Wide Web Consortium**, the Semantic Web extends the Web through the use of standards, **markup languages** and related processing tools.”  Wikipedia (2006a)
Resource Description Framework (RDF)

- W3C specification originally for metadata modelling in XML
- Metadata model based on statements about resources, three parts (triples):
  - Subject: The resource (often in form of URI)
  - Predicate: aspects of the resource and the relationship between the subject and the object.
  - Object: property
- To read more Wikipedia (2006c)
Ontologies 1

- Typical kind of ontology for Web applications has a taxonomy and a set of interference rules.
- Taxonomy defines classes of objects and the relations among them.
Ontologies 2

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- Taxonomy defines classes of objects and the relations among them.
OWL (Web Ontology Language)

- A Markup Language for sharing ontologies on the web.
- Designed for applications that need machine-readable content not just for humans.
- Written in XML
- For more information see Wikipedia (2006b)
AI aspects (or weak AI (see Wikipedia (2006a))) comes from the machine-readable aspects.

Machines ability to perform well defined tasks and well-defined data, for a well-defined problem (Wikipedia 2006a)

Is this AI?
AI and the semantic web

- AI aspects (or weak AI (see Wikipedia (2006a))) comes from the machine-readable aspects.

- Machines ability to perform well defined tasks and well-defined data, for a well-defined problem (Wikipedia 2006a)

- Is this AI?
Internal research

- An ex-MSc student has recently submitted a paper on something similar.
- Presented at a conference May 2011.
Using the link below:

http://inspector.sindice.com/

Investigate several sites including the one below:

http://www.computing.northampton.ac.uk/~scott/
References and Bibliography


Wikipedia (NA) Software Agents