Artificial Intelligence

the last moments

http://www.hcibook.com/alan/teaching/ai355/

Alan Dix (coordinator)

with thanks to …
Geoff Coulson, Paul Rayson, Gerd Kortoum, Manolis Sifalakis, Keith Cheverst, Hans Gellerson

intelligence and the web

currently lost of human readable information

… but hard to automatically process

Options:

- extract structure
  - search algorithms & data mining
- try to make it more structured
  - Semantic Web – lots of XML + RDF

search

- More IR (information retrieval) than AI
  - word matching etc.
- Google Page Rank:
  - pretend ….
    1. you start at a random page
    2. choose a random link
    3. get to a new page
    4. go back to 2
  - pages visited often are ‘important’
  - ‘ant-like (or drunkards walk) technique!

data mining

- extract information from pages
  - NLP or pattern matching techniques

Focus

- one document
  - e.g. Snip!t (www.snipit.org)
- whole web
  - e.g. citeseer (citeseer.ist.psu.edu)
    - scan’s web for academic documents (PDF, HTML)
    - parses title, authors, reference list at end
    - produces automatic citation index

Semantic Web

- Vision … all web documents annotated with Mete Data
- Meta Data
  - Information about the document's provenance
    - Author, date of production, etc.
  - Structured representation of document content

RDF … all in threes

Triples:

subject predicate object

subject: URI (not nec.. URL!)
predicate: URI
object: URI / literal

You can do a lot with triples …

++ Web 2.0

- folksonomies … let the people do it!
  - tags as in Flickt, del.icio.us, etc.
- but … can data mine folksonomies
  - build structures from apparent anarchy

Knowledge Representation facts (examples)

- Predicate logic

  is_person(Jane) ∧ meeting(Jane,10am,tax_office)

- Frames (a bit like objects)

  Meeting { who:Jane, when:10am, where: tax_office)

named ‘slots’

- Semantic Web - triples/RDF

  id#15 class Person, id#15 name ‘Jane’,

  id#37 class Meeting, id#37 time ‘10am’, id#37 who id#15

in RDF URIs

- may have probabilities, weights …

  meeting(Jane,*time*,tax_office), *time*=10am 75%, *time*=11am 25%

plan …

week	lecturer	topic
11	Alan Dix	Intro and my bits …
12	Geoff Coulson	Scheme Programming and Search Algorithms
13	Geoff Coulson	
14	Paul Rayson	Natural Language Processing
15	Gerd Kortuem	Reasoning, including Distributed Reasoning (plus maybe temporal reasoning)
16	Manolis Sifalakis	Emergent AI, Ant models, natural comp., …
17	Manolis Sifalakis	Applications to Networking
	Keith Cheverst	Decision Trees for Ambient Intelligence
18	Hans Gellerson	Machine Learning and N. Nets for AmbientI
19	Hans Gellerson	Computer Vision and Ubicomp
20	Alan Dix (& GC)	Group presentations
	Alan Dix	Wrap up (maybe bit of semantic web)