

# Artificial Intelligence

the last moments

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

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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](http://www.snipit.org))
- whole web
  - e.g. citeseer ([citeseer.ist.psu.edu](http://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 Meta 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 Flickr, 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 Ambientl
19	Hans Gellerson	Computer Vision and Ubicomp
20	Alan Dix (& GC)	Group presentations
	Alan Dix	Wrap up (maybe bit of semantic web)