Mining Incomplete Data—A Rough Set Approach

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Sequential Methods, I

- Deleting cases with missing attribute values (*listwise deletion, casewise deletion, complete case analysis*)
- The most common value of an attribute
- The most common value of an attribute restricted to a concept
- Assigning all possible attribute values to a missing attribute value
- Assigning all possible attribute values restricted to a concept

Sequential Methods, II

- Replacing missing attribute values by the attribute mean
- Replacing missing attribute values by the attribute mean restricted to a concept
- Global closest fit
- Concept global fit
- Imputation
  - ML method (*maximum likelihood*)
  - EM method (*expectation-maximization*)
  - Single random imputation
  - Multiple random imputation

Parallel Methods

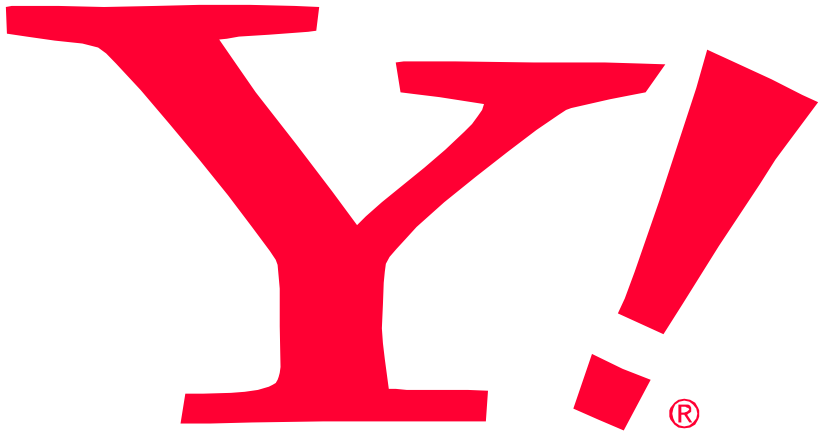
- C4.5
- CART
- MLEM2
  - Characteristic Relations
  - Singleton, Subset, and Concept Approximations
  - Local Approximations
  - Rule Induction

Incomplete Data

- Missing attribute values:
  - Lost values are denoted by ?
  - "do not care" conditions are denoted by *
  - attribute-concept values are denoted by –
- All decision values are specified
- For each case at least one attribute value is specified

An Incomplete Decision Table

	Attributes			Decision
Case	Temperature	Headache	Nausea	Flu
1	high	–	no	yes
2	very_high	yes	yes	yes
3	?	no	no	no
4	high	yes	yes	yes
5	high	?	yes	no
6	normal	yes	no	no
7	normal	no	yes	no
8	–	yes	*	yes



Extendable Dialog Script Description Language for Natural Language User Interfaces

13/4/16

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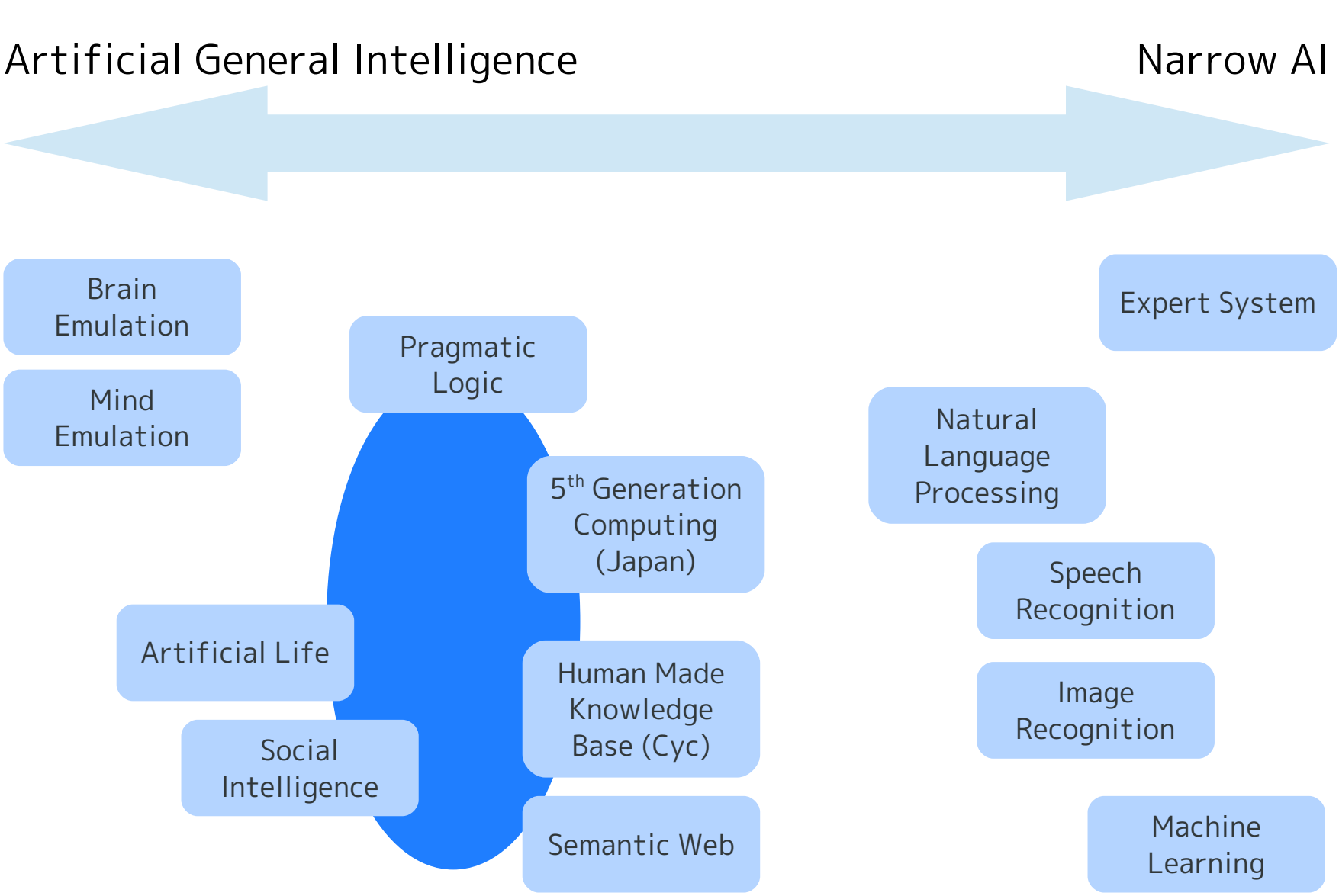
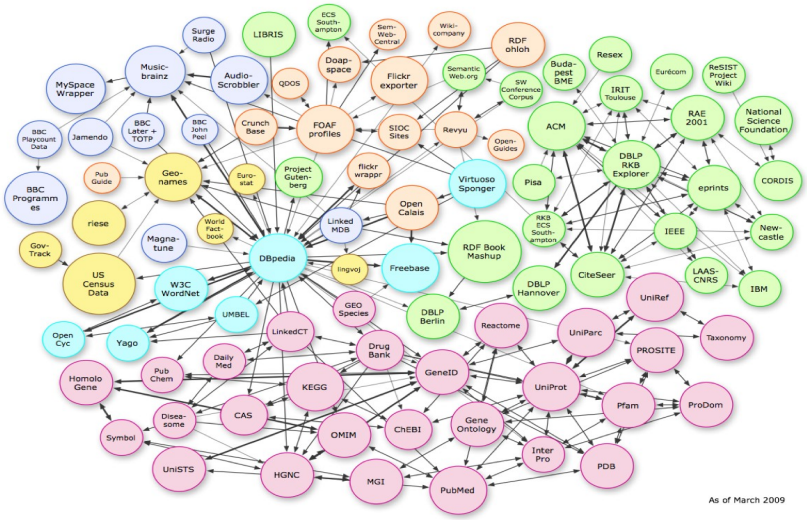
Artificial General Intelligence and Narrow AI



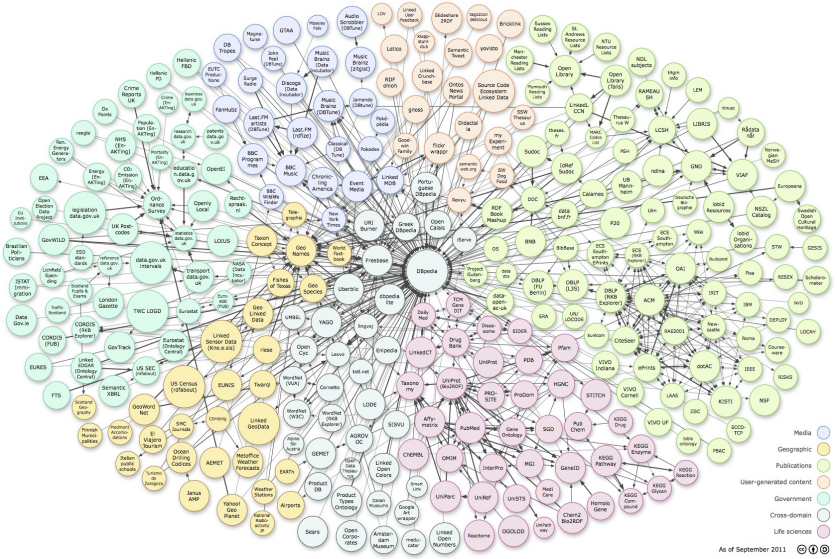
Rapidly Growing LOD Project Community

2009



(Bizer et al. 2009)

2011



Linking Open Data cloud diagram,
by Richard Cyganiak and Anja Jentzsch.
http://lod-cloud.net/

Breakthrough in AGI Side

Manually constructed knowledge base

Photo by inmymemory

Collaboratively accumulated knowledge base

Photo by inmymemory