

Discussion Session at NeSy10, AAAI 2010

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General or Narrow AI?

IET/BCS Turing lecture 2010 (Chris Bishop)

1960s-1980s: Expert Systems (hand-crafted rules)

“Within a generation... the problem of creating 'artificial intelligence' will largely be solved” Marvin Minsky 1967

1990's-present: Neural networks, Support vector machines (difficult to include domain knowledge)

New AI: Bayesian learning, probabilistic graphical models, efficient inference

Neural-Symbolic Computation is... ...Interdisciplinary

Cognitive Science



Logic

Machine Learning

Probability Theory

Computer Science
Neural Computation



Neuroscience

...Related to SRL and ILP but
underpinned by neural computation

Publication

Journal of Logic and Computation:
learning and reasoning corner
(Garcez and Valiant, eds.)

Joint position paper by workshop participants?
What brings us together
2-3 pages on specific topics
Comparisons (BBS-style Q&A or reviews)
Future directions (agreed upon)

Integrating Robust Learning and Efficient Reasoning

recurrent vs symmetric nets / deep nets

reconciling FOL learning and FOL reasoning

new learning algorithms / semi-supervised learning

multiple instance / relational learning

neuro-fuzzy systems reasoning about uncertainty

learn-reason-action cycle parallelism / fault tolerance

representation language: nonclassical logic

rule extraction: sound and complete, quantization

applications: simulation, video classification, web

model checking / software engineering / control theory