

University of California, Merced
COGS 125 / CSE 175 : Introduction to Artificial Intelligence

A Brief History Of Artificial Intelligence

David C. Noelle, Ph.D.

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Reading Quiz

- Testing Out *Top Hat* Service
- Readings:
 - Course Syllabus
 - AIMA, Sections I.I-I.5

Class Business

- Please visit the course web site on CatCourses regularly.
- This week's laboratory sessions will review Java™ programming concepts, along with associated exercises. Attendance at laboratory sessions is required.
- Please resolve issues concerning appropriate preparation for the class as soon as you can.
- Please keep up with the readings, as specified in the course syllabus.

Residual Questions



History Of Artificial Intelligence

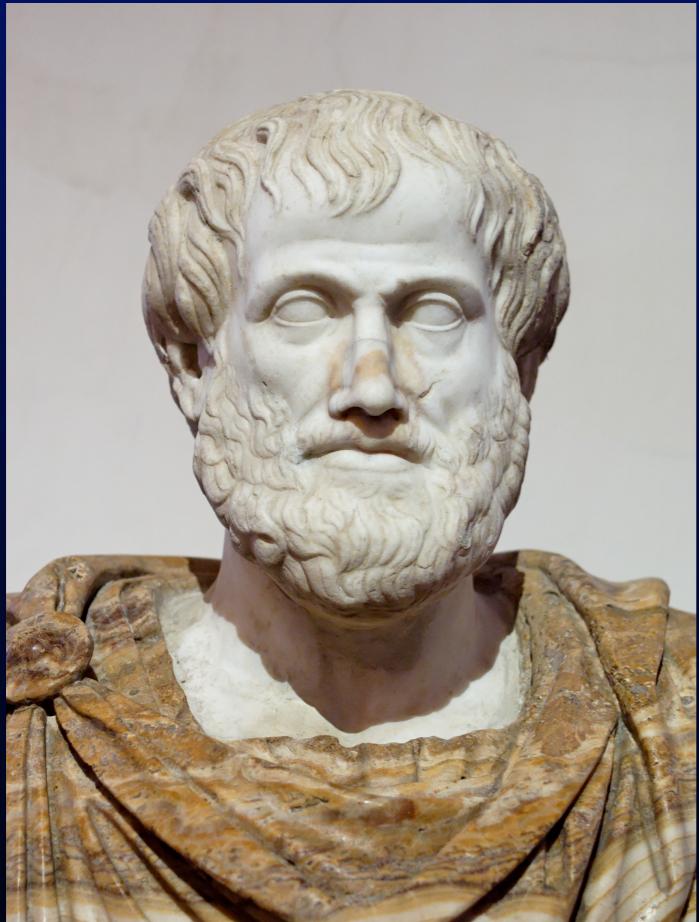
- The Very Concept
- Prehistory of Artificial Intelligence
 - Philosophy
 - Mathematics & Computer Science
 - Psychology & Neuroscience
 - Linguistics
 - Economics, Control Theory, Etc.
- The History of AI as a Distinct Field
- Current Institutions

Core Concepts

- At its core, AI brings together two traditionally disparate conceptual domains:
 - physical mechanism, highly complex machinery
 - mind, thought, reasoning, intelligence
- Other fields of study have contributed to each of these domains, offering new mechanistic designs for performing tasks or new views on the nature of thought.
- Some fields have actually tried to bridge the gap.

Philosophy

- logic
- the mind as a physical system



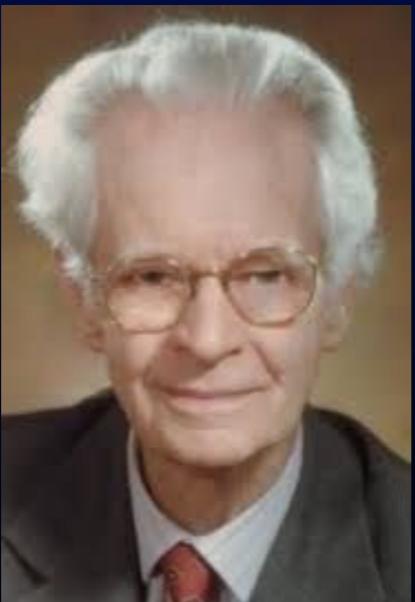
Mathematics & Computer Science

- formal representations of knowledge and proofs
- algorithms
- computation
 - undecidability
 - intractability
- probability theory



Psychology & Neuroscience

- behavior as a mapping from sensory perception to motor action
- internal representations
- environmental adaptation
- physical basis of mental activity



Linguistics

- formal (syntactic) mechanisms of understanding language meaning
- grammar



Other Disciplines

- Economics
- Political Science
- Control Theory
- Statistics
- ...

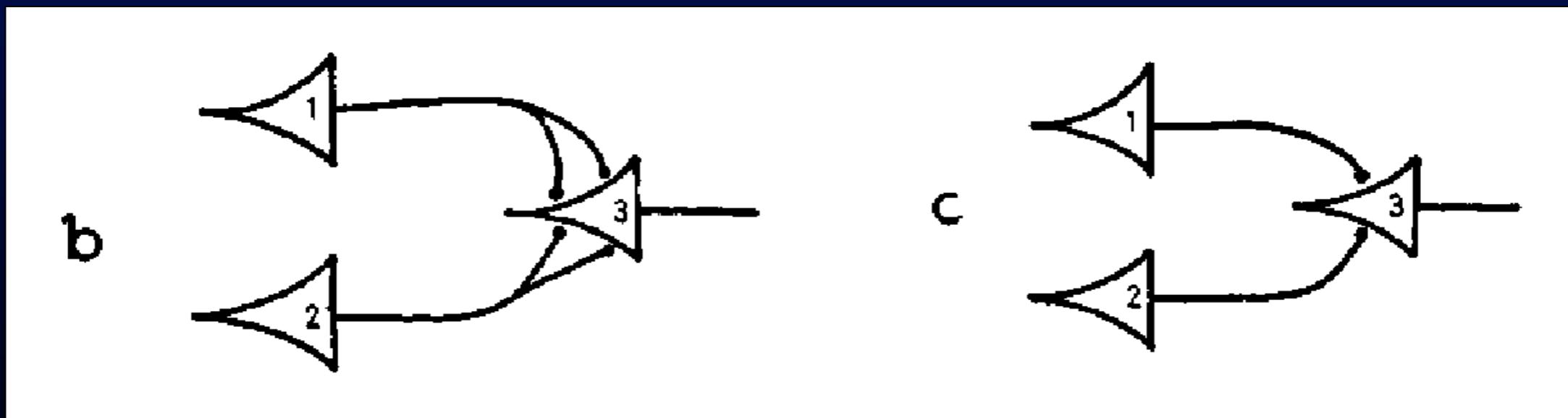
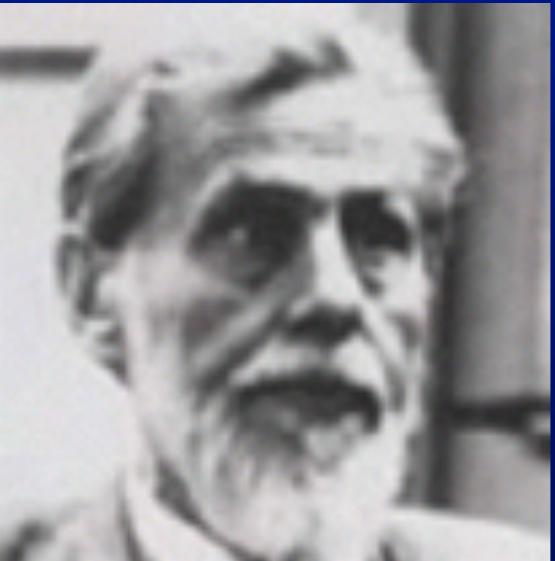
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- 1966-74 AI discovers computational complexity
Neural network research almost disappears
- 1969-79 Early development of knowledge-based systems
- 1980-88 Expert systems industry booms
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- 1988- Resurgence of probabilistic and decision-theoretic methods
Rapid increase in technical depth of mainstream AI
"Nouvelle AI": Alife, GAs, soft computing,
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Warren McCulloch & Walter Pitts



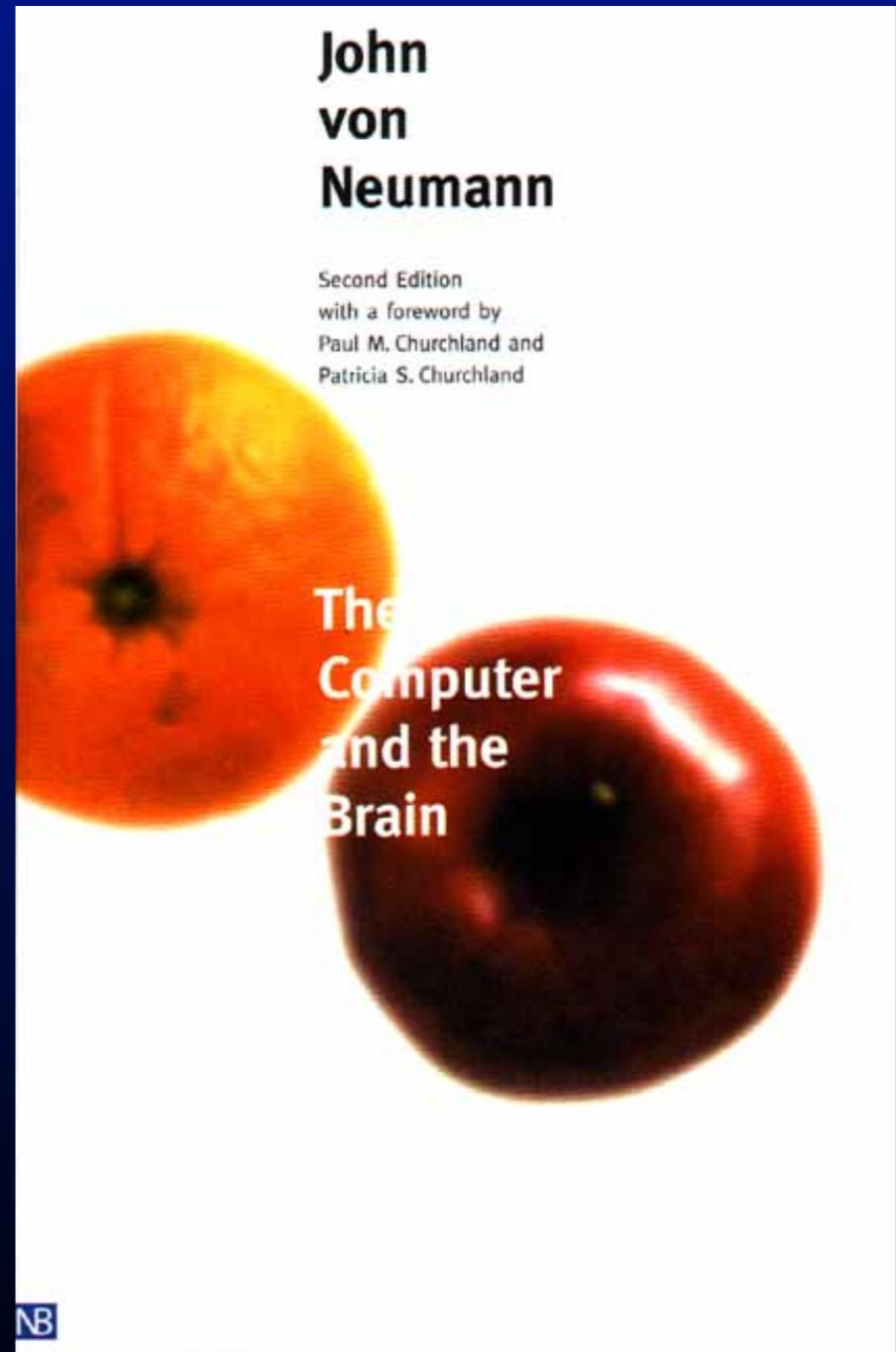
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Alan Turing



John Von Neumann



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Arthur Samuel



Allen Newell & Herbert Simon



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Dartmouth Meeting

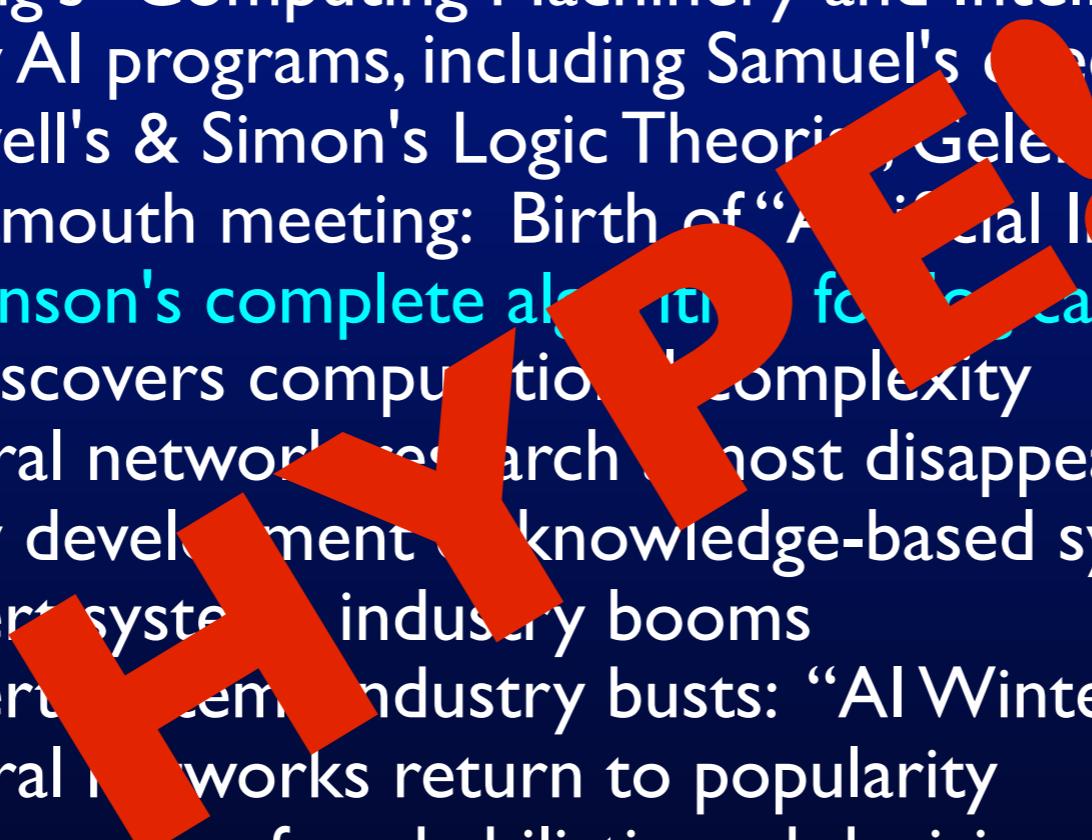
- John McCarthy
- Marvin Minsky
- Trenchard More
- Allen Newell
- Nathaniel Rochester
- Arthur Samuel
- Oliver Selfridge
- Claude Shannon
- Herbert Simon
- Ray Solomonoff

Coined the term “artificial intelligence”.

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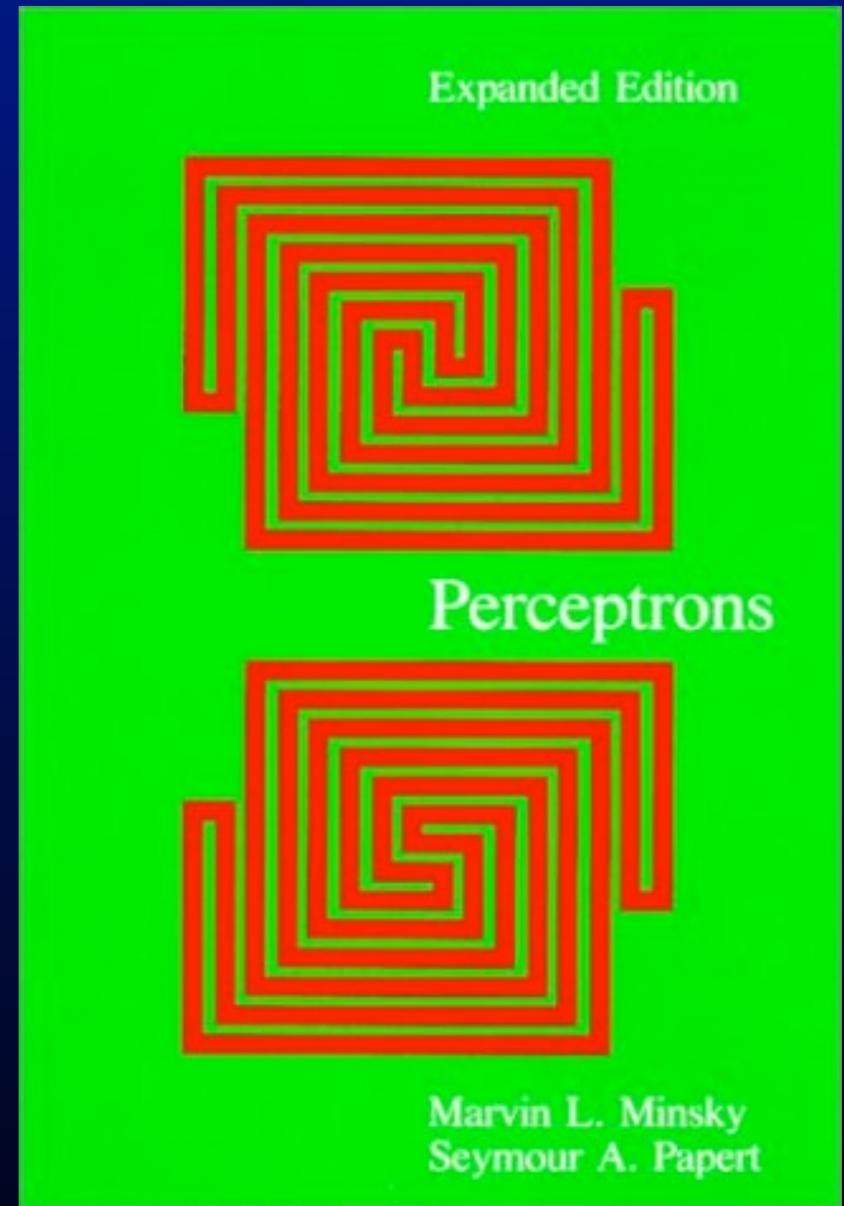
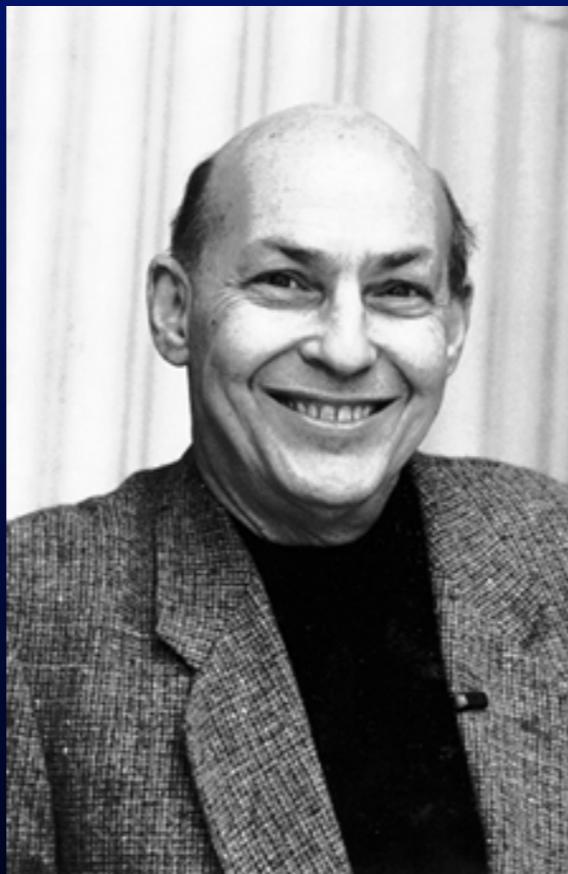
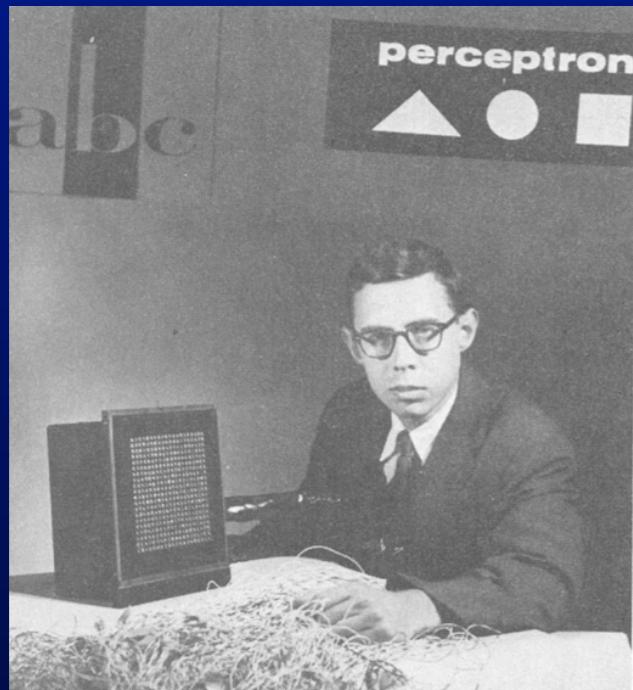
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Frank Rosenblatt & Marvin Minsky



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Edward Feigenbaum



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Expert Systems



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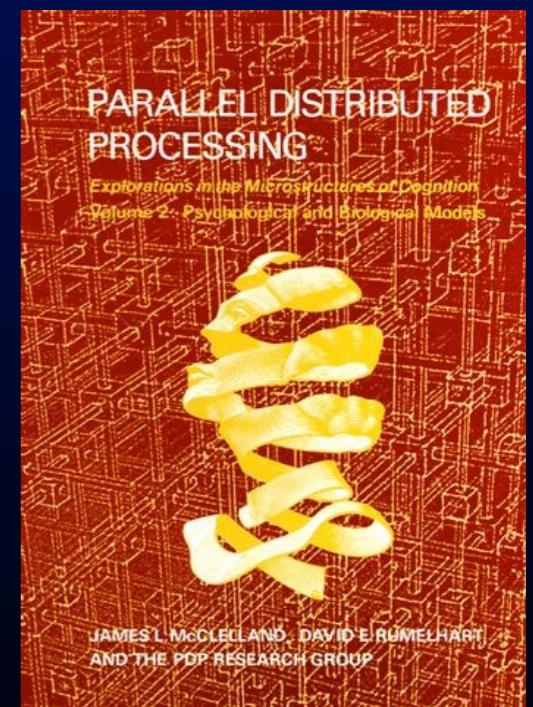
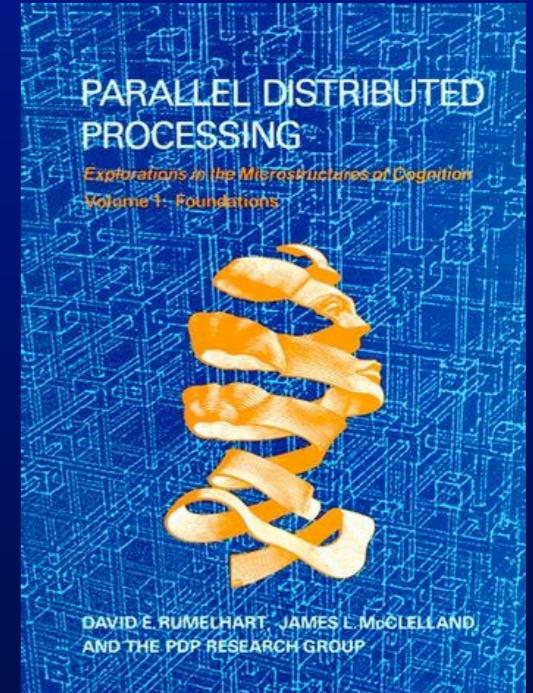
The PDP Research Group



David Rumelhart



James McClelland



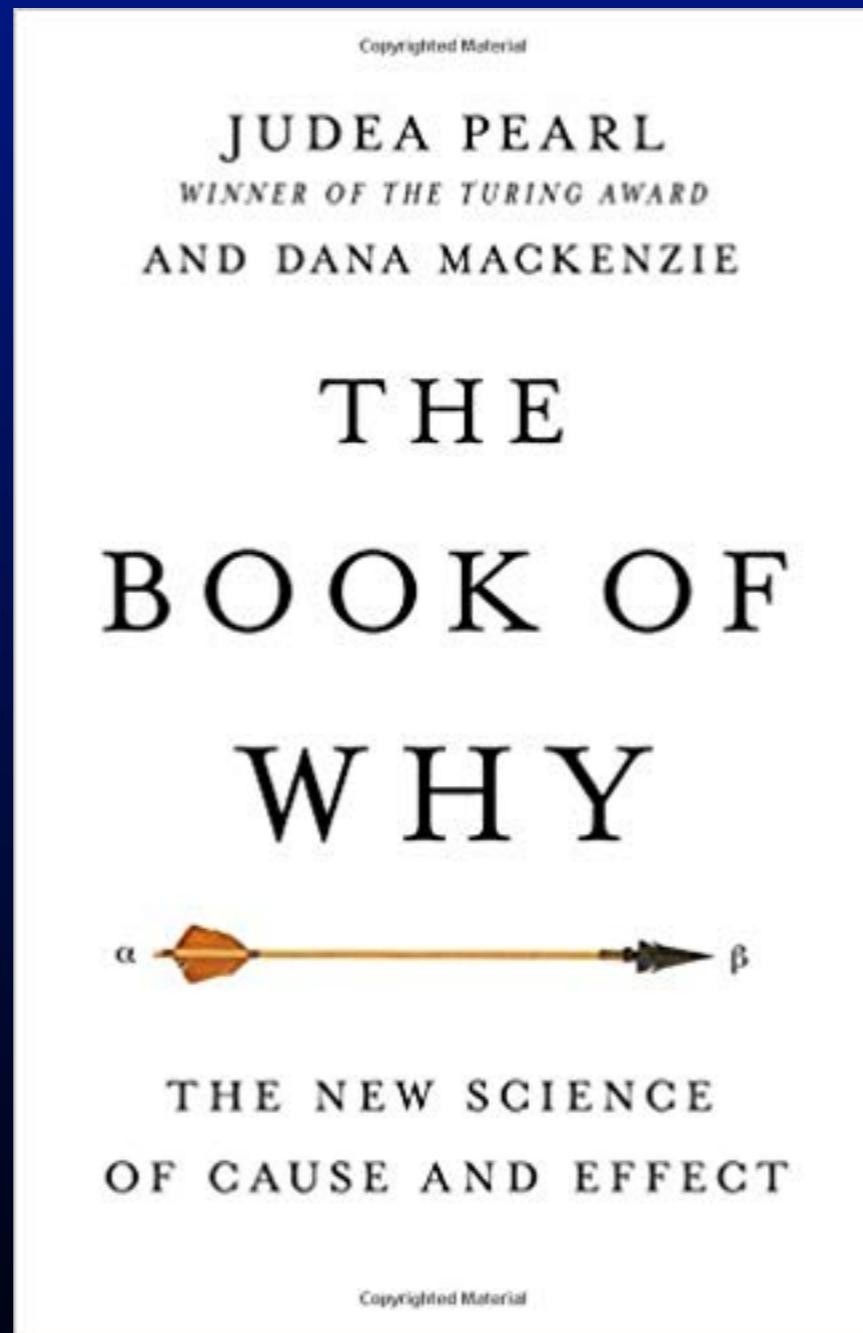
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Bayesian Methods



Bayesian Methods



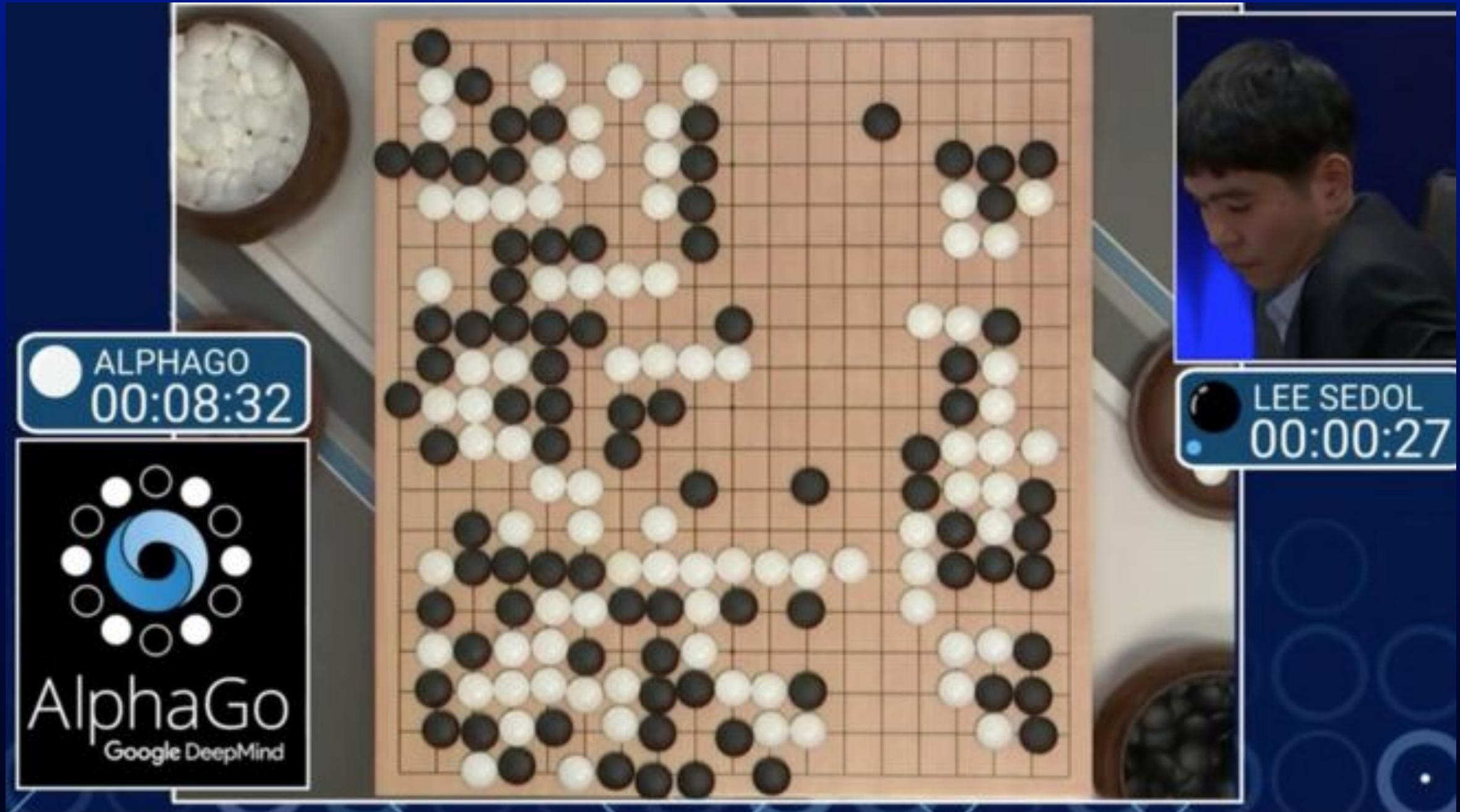
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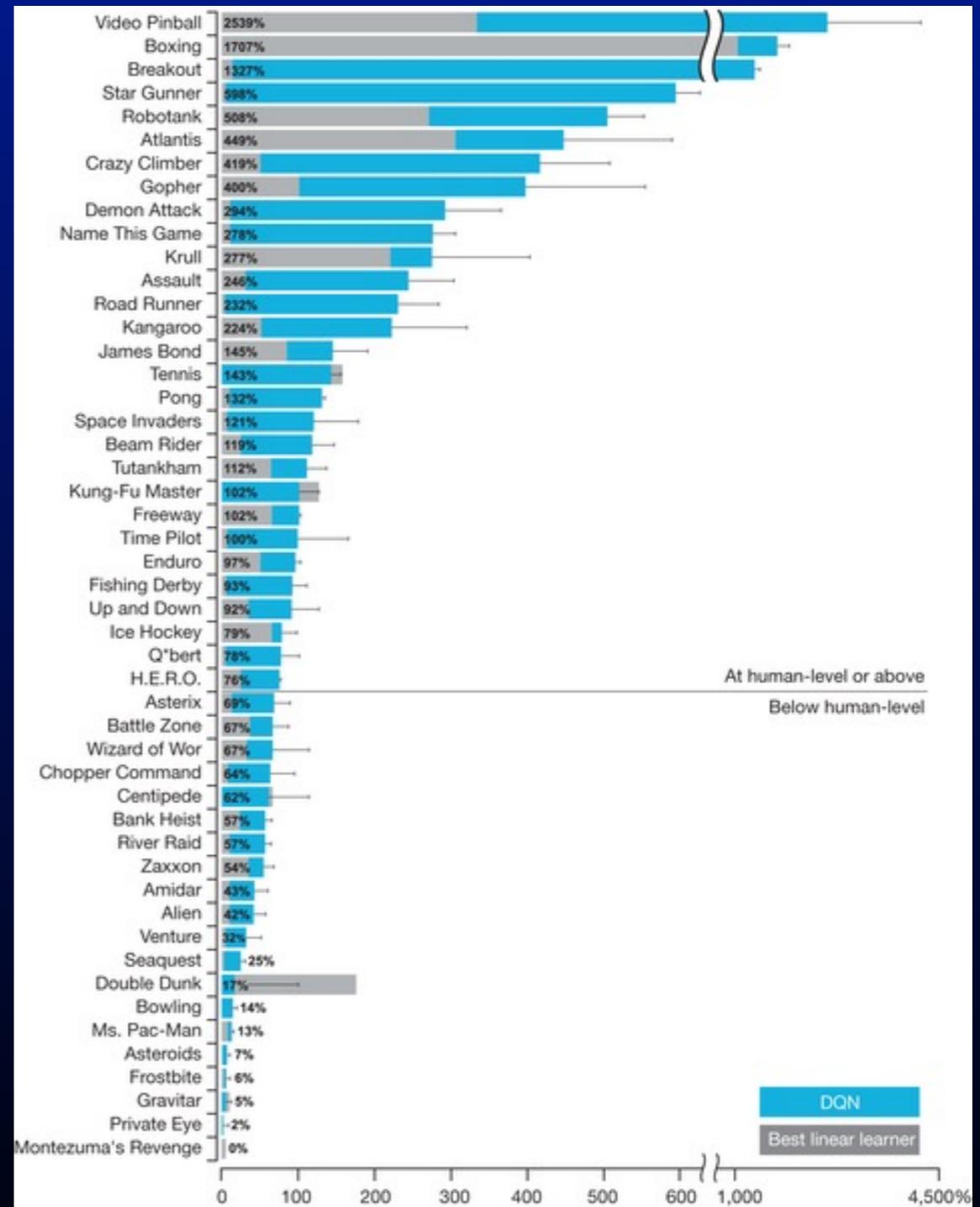
IBM's Watson



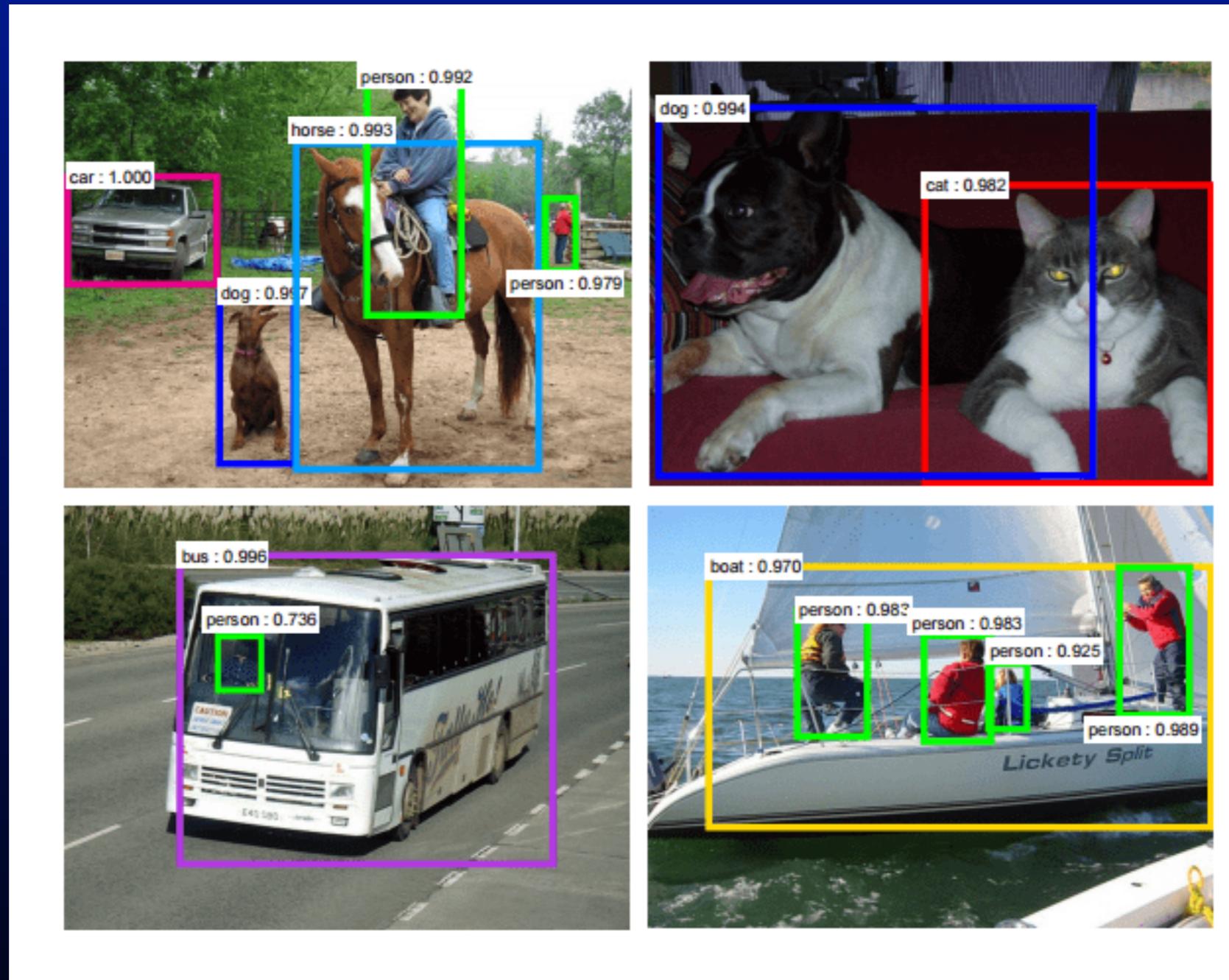
Deep Learning



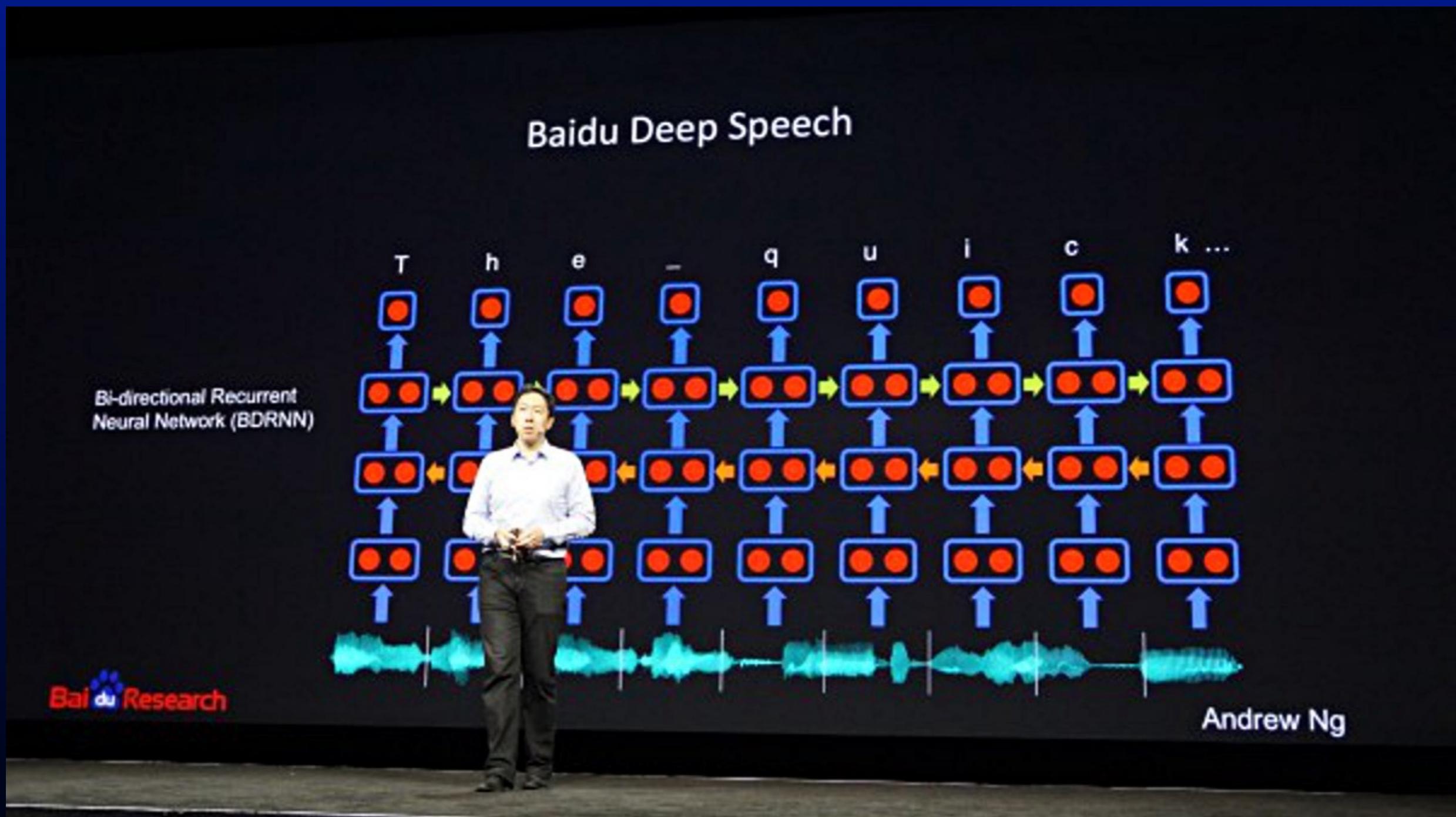
Deep Learning



Deep Learning



Deep Learning



Deep Learning



AI Institutions

- Organizations

- Association for the Advancement of Artificial Intelligence (AAAI)
- ACM Special Interest Group in Artificial Intelligence (SIGART)

- Journals

- *Artificial Intelligence*
- *Neural Computation*
- *Journal of Artificial Intelligence Research*
- *IEEE Transactions on Pattern Analysis and Machine Intelligence*

- Conferences

- National Conference on Artificial Intelligence (AAAI)
- International Joint Conference on Artificial Intelligence (IJCAI)
- Neural Information Processing Systems (NIPS)

