Slide 1

GAMES

CSE 511A: Introduction to Artificial Intelligence

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Slide 2
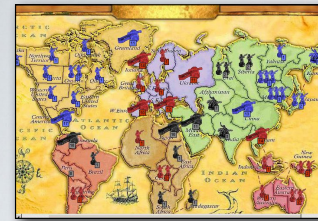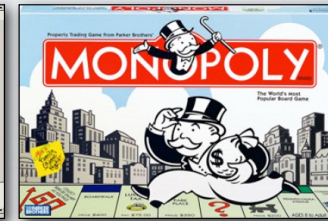
Risk   Monopoly   Poker
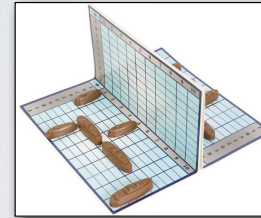
Battleship   Tic-tac-toe   Chess
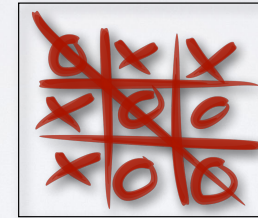
2

Slide 3

GAMES

	deterministic	stochastic
perfect information		
imperfect information		

3

Slide 4

GAMES

	deterministic	stochastic
perfect information		
imperfect information		

4

GAMES

deterministic   stochastic

perfect
information

imperfect
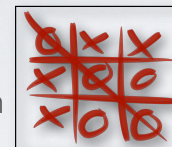information

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GAMES

deterministic   stochastic

perfect
information

imperfect
information

6
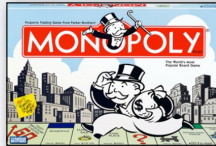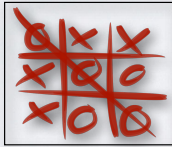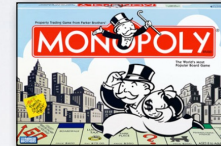
GAMES

deterministic   stochastic

perfect
information

imperfect
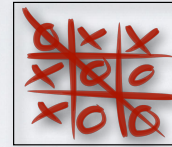information

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GAMES

deterministic   stochastic

perfect
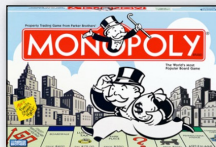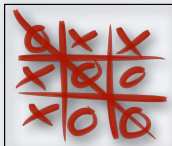information

imperfect
information

8

9

GAMES

deterministic   stochastic

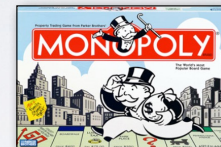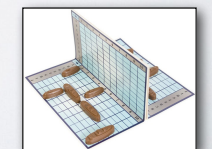perfect
information

imperfect
information

Increasing difficulty

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STATE OF THE ART

- Checkers:
  - 1950: First computer player.
  - 1994: First computer champion: Chinook ended 40-year-reign of human champion Marion Tinsley using complete 8-piece endgame
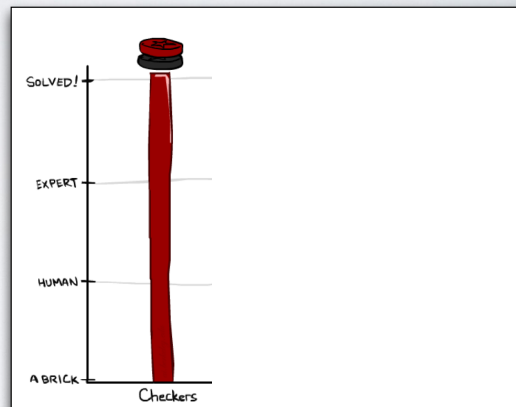 - 2007: Checkers solved!

SOLVED!

EXPERT

HUMAN

A BRICK

Checkers

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STATE OF THE ART

- Chess:
  - 1997: Deep Blue defeats human champion Gary Kasparov in a six-game match. Deep Blue examined 200M positions per second, used very sophisticated evaluation and undisclosed methods for extending some lines of search up to 40 ply. Current programs are even better, if less historic.
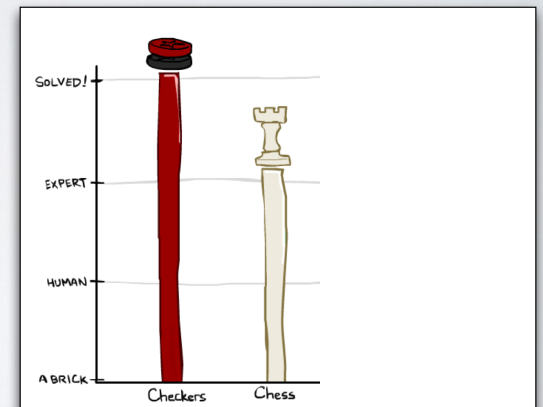
SOLVED!

EXPERT

HUMAN

A BRICK

Checkers   Chess

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STATE OF THE ART

- Go:

  - 2016: AlphaGo beat Lee Sedol in landmark match. In go, b > 300! Classic programs use pattern knowledge bases, but big recent advances use Monte Carlo (randomized) expansion methods with deep learning.
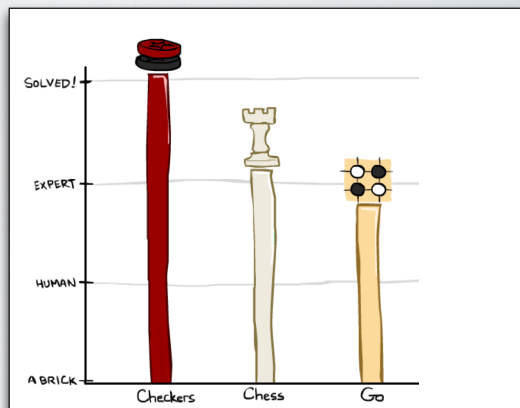
  - 2017: AlphaGo Zero beats AlphaGo

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STATE OF THE ART

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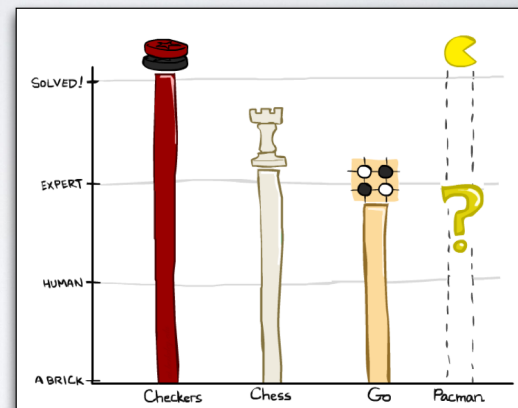
  - 2017: AlphaGo Zero beats AlphaGo

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