

Artificial Intelligence

GWU Pre-College Summer
Robotics

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Practical

- Enough philosophy, what can we do?
- Many sub-fields, we'll look at
 - Playing games
 - Path planning
- For that, we will need
 - Trees, Graphs
- And for that, we will need objects

Graphs

- Data structure
 - Nodes – objects
 - Edges – links between nodes
- Examples
 - Map of US cities
 - Friends (Facebook)
- Directed or undirected

Tree

- A special type of graph
 - No loops

Machines will be capable, within twenty years, of
doing any work that a man can do.
- Herbert Simon, 1965

Optimistic

- Herbert Simon was no idiot
 - Turing Award, Nobel Prize
 - Spurred on by early success
 - Saw the main limitation being computing power
 - 1967 Gordon Moore coined his famous law

AI Accomplishments

- Has come a long way
- Beat Gary Kasparov in chess (1997)
- Expert systems assist in many fields
- Some so common place we don't even consider it AI any more
 - Speech and text recognition
 - Facial recognition

Strong AI

- Intelligence comparable (or surpassing) human
- Less progress
- Ill-defined
- Holy Grail

Turing Test

- How do we tell if a machine is intelligent?
- What is intelligence?
- Alan Turing developed a test
 - Can the machine fool a human examiner into think that it is actually a human?
 - Separated, communicate only through text
 - Sidesteps defining intelligence

Narrow AI

- Chinese Room
 - John Searle
- Simulating intelligence is not the same as having consciousness