Artificia

Ch

C

- What is AI?
- A brief history
- The state of the art

Wh

Systems that think like hun
Systems that act like huma

Acting human

Turing (1950) "Computing machi

♢ Operational test for intelligent

♢ Predicted that by 2000, a mac

- ♢ Anticipated all major argumen
- ♢ Suggested major components

understanding, learning

Problem: Turing test is not **reprc**
amenable to **mathematical ana**

Thinking human

1960s "cognitive revolution": info
prevailing orthodoxy of behavioris

Requires scientific theories of inte

– What level of abstraction? " "

1) Predicting and testing behavior

or 2) Direct identification from ne

Both approaches (roughly, Cognit
are now distinct from AI

Both share with AI the following c

the available theories do not

anything resembling human-l

Hence, all three fields share one p

Thinking rationa

Normative (or prescriptive) rather

Aristotle: what are correct argume

Several Greek schools developed v

notation and **rules of derivatio**
may or may not have proceeded t

Problems:

1) Not all intelligent behavior is m

2) ? What thoughts **should** I ha

out of all the thoughts (logical or

Acting

Rational behavior: doing the right

The right thing: that which is exp
given the available information

Doesn't necessarily involve thinkin
thinking should be in the service o

Every art and every inquiry, a

action and pursuit, is though

Ratio

An agent is an entity that perceiv

This course is about designing rat

Abstractly, an agent is a function

$$f : \mathcal{P}^* \to \mathcal{A}$$

For any given class of environmen

Caveat: **computational limitat**

perfect rationality unachiev

$\rightarrow$ design best for given machin

AI p

Philosophy	logic, methods of mind as physical foundations of lea
Mathematics	formal representa algorithms, comp probability
Psychology	adaptation phenomena of pe experimental tech

Potted

McCulloch & Pitts: Boolean
Turing's "Computing Machine
Look, Ma, no hands!
Early AI programs, including
Newell & Simon's Logic Theo
Dartmouth meeting: "Artifici
Robinson's complete algorithm
AI discovers computational co
Neural network research almo

State

Which of the following can be do

- ♢ Play a decent game of table te

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Unintention

One day Joe Bear was hungry. He
honey was. Irving told him there
threatened to hit Irving if he didn
End.

Henry Squirrel was thirsty. He wa

Once upon a time there was a dis
crow was sitting in his tree, holdi
noticed that he was holding the p
swallowed the cheese. The fox wa

Unintention

Joe Bear was hungry. He asked Ir
refused to tell him, so Joe offered
where some honey was. Irving agr
worms were, so he asked Irving, w
him a worm if he'd tell him where
didn't know where any worms wer
So Joe offered to bring him a wor