

Artificial Intelligence

Nathan Sprague
JMU Department of Computer Science

Fall, 2014

Agenda

- The grave difficulties we face.
- The path forward.

Difficulty #1: Definitions

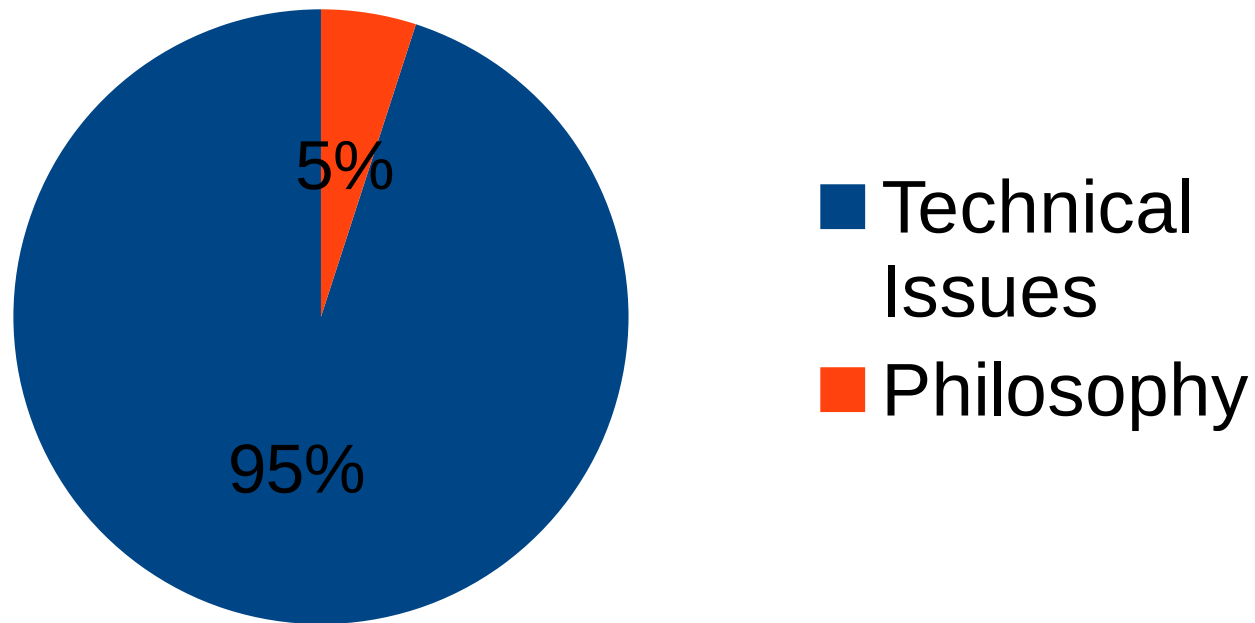
- Even defining AI raises thorny/interesting philosophical questions:
 - How do we define intelligence?
 - What is the connection between intelligence and consciousness? (if any)
 - Is it possible for a machine to be intelligent (or conscious)?
 - If we *can* create intelligent computers, *should* we?

Difficulty #1: Definitions

- Even defining AI raises thorny/interesting philosophical questions:
 - How do we define intelligence?
 - What is the connection between intelligence and consciousness? (if any)
 - Is it possible for a machine to be intelligent (or conscious)?
 - If we *can* create intelligent computers, *should* we?
- First step for us:
 - **Computing Machinery and Intelligence**
(Alan Turing, 1950)



The Mix for This Course



Difficulty #2: AI is a Mess

Problem Domains

Algorithmic Approaches

	Computer Vision	Robotics	Natural Language Understanding	Artificial Creativity	...
Graph Search					
Logic					
Constraint Satisfaction					
Probabilistic/ Statistical methods					
Planning					
Control Theory					
Machine Learning/ Neural Networks					
...					

Problem #4:

AI is Intrinsically Disappointing

- Once one understands an AI algorithm, it no longer seems ... intelligent.

Problem #4:

AI is Intrinsically Disappointing

- Once one understands an AI algorithm, it no longer seems ... intelligent
- Once a problem is solved it no longer counts as AI
- The problems that are left are often *fundamentally* hard

A Bit of History

- *Shakey the Robot* (1969)
- Also check out:
The Quest for Artificial Intelligence
Nils Nilsson, 2010.

What Went Wrong?

- Today's computers are (very roughly) one million times more powerful than those available in 1970.

The Plan

- In one semester we can:
 - Develop a sense for why the problems are hard
 - Focus on foundations

The Plan

- In one semester we can:
 - Develop a sense for why the problems are hard
 - Focus on foundations
- The good news:
 - All other areas of CS are pointless and boring in comparison to AI.