CS343 Artificial Intelligence

Prof: Peter Stone

Department of Computer Science The University of Texas at Austin

Good Afternoon, Colleagues



Good Afternoon, Colleagues

Are there any questions?

Questions about the syllabus?

- Questions about the syllabus?
- Class registration

- Questions about the syllabus?
- Class registration
- Problems with the assignment?

- Questions about the syllabus?
- Class registration
- Problems with the assignment?
- Mailing list announcements yesterday

- Questions about the syllabus?
- Class registration
- Problems with the assignment?
- Mailing list announcements yesterday
 - FAI talks
 - CC Daniel (urieli@cs), and me on everything

- Questions about the syllabus?
- Class registration
- Problems with the assignment?
- Mailing list announcements yesterday
 - FAI talks
 - CC Daniel (urieli@cs), and me on everything
- Assignments up through week 3

- Questions about the syllabus?
- Class registration
- Problems with the assignment?
- Mailing list announcements yesterday
 - FAI talks
 - CC Daniel (urieli@cs), and me on everything
- Assignments up through week 3

Autonomous robot

- Autonomous robot
- Information gathering agent
 - Find me the cheapest?

- Autonomous robot
- Information gathering agent
 - Find me the cheapest?
- E-commerce agents
 - Decides what to buy/sell and does it

- Autonomous robot
- Information gathering agent
 - Find me the cheapest?
- E-commerce agents
 - Decides what to buy/sell and does it
- Air-traffic controller

- Autonomous robot
- Information gathering agent
 - Find me the cheapest?
- E-commerce agents
 - Decides what to buy/sell and does it
- Air-traffic controller
- Meeting scheduler

- Autonomous robot
- Information gathering agent
 - Find me the cheapest?
- E-commerce agents
 - Decides what to buy/sell and does it
- Air-traffic controller
- Meeting scheduler
- Computer-game-playing agent

Not Intelligent Agents

- Thermostat
- Telephone
- Answering machine
- Pencil
- Java object

Environment \Longrightarrow sensations, actions

• fully observable vs. partially observable (accessible)

- fully observable vs. partially observable (accessible)
- single-agent vs. multiagent

- fully observable vs. partially observable (accessible)
- single-agent vs. multiagent
- deterministic vs. non-deterministic

- fully observable vs. partially observable (accessible)
- single-agent vs. multiagent
- deterministic vs. non-deterministic
- episodic vs. sequential

- fully observable vs. partially observable (accessible)
- single-agent vs. multiagent
- deterministic vs. non-deterministic
- episodic vs. sequential
- static vs. dynamic

- fully observable vs. partially observable (accessible)
- single-agent vs. multiagent
- deterministic vs. non-deterministic
- episodic vs. sequential
- static vs. dynamic
- discrete vs. continuous

- fully observable vs. partially observable (accessible)
- single-agent vs. multiagent
- deterministic vs. non-deterministic
- episodic vs. sequential
- static vs. dynamic
- discrete vs. continuous
- known vs. unknown

 programmable thermostat(3); maid robot(2); automated cook(2); intelligent house; beer retriever

- programmable thermostat(3); maid robot(2); automated cook(2); intelligent house; beer retriever
- vending machine

- programmable thermostat(3); maid robot(2); automated cook(2); intelligent house; beer retriever
- vending machine
- HAL 9000; anthropomorphic robot

- programmable thermostat(3); maid robot(2); automated cook(2); intelligent house; beer retriever
- vending machine
- HAL 9000; anthropomorphic robot
- autonomous tank; counter-terrorist robot; exploration robot; harvester; self-parking car

- programmable thermostat(3); maid robot(2); automated cook(2); intelligent house; beer retriever
- vending machine
- HAL 9000; anthropomorphic robot
- autonomous tank; counter-terrorist robot; exploration robot; harvester; self-parking car
- Fantasy basketball player; hockey player

- programmable thermostat(3); maid robot(2); automated cook(2); intelligent house; beer retriever
- vending machine
- HAL 9000; anthropomorphic robot
- autonomous tank; counter-terrorist robot; exploration robot; harvester; self-parking car
- Fantasy basketball player; hockey player
- video game Al(2); tetris-player(2); self-solving rubics cube

- programmable thermostat(3); maid robot(2); automated cook(2); intelligent house; beer retriever
- vending machine
- HAL 9000; anthropomorphic robot
- autonomous tank; counter-terrorist robot; exploration robot; harvester; self-parking car
- Fantasy basketball player; hockey player
- video game Al(2); tetris-player(2); self-solving rubics cube
- Cleverbot (NLP); Siri; psychotherapist; question answerer

- programmable thermostat(3); maid robot(2); automated cook(2); intelligent house; beer retriever
- vending machine
- HAL 9000; anthropomorphic robot
- autonomous tank; counter-terrorist robot; exploration robot; harvester; self-parking car
- Fantasy basketball player; hockey player
- video game Al(2); tetris-player(2); self-solving rubics cube
- Cleverbot (NLP); Siri; psychotherapist; question answerer
- content recommender(2); spam classifier; search engine

- programmable thermostat(3); maid robot(2); automated cook(2); intelligent house; beer retriever
- vending machine
- HAL 9000; anthropomorphic robot
- autonomous tank; counter-terrorist robot; exploration robot; harvester; self-parking car
- Fantasy basketball player; hockey player
- video game Al(2); tetris-player(2); self-solving rubics cube
- Cleverbot (NLP); Siri; psychotherapist; question answerer
- content recommender(2); spam classifier; search engine
- song composer(2); jazz accompanist; drummer; Guitar hero player

- programmable thermostat(3); maid robot(2); automated cook(2); intelligent house; beer retriever
- vending machine
- HAL 9000; anthropomorphic robot
- autonomous tank; counter-terrorist robot; exploration robot; harvester; self-parking car
- Fantasy basketball player; hockey player
- video game Al(2); tetris-player(2); self-solving rubics cube
- Cleverbot (NLP); Siri; psychotherapist; question answerer
- content recommender(2); spam classifier; search engine
- song composer(2); jazz accompanist; drummer; Guitar hero player
- congressman

- programmable thermostat(3); maid robot(2); automated cook(2); intelligent house; beer retriever
- vending machine
- HAL 9000; anthropomorphic robot
- autonomous tank; counter-terrorist robot; exploration robot; harvester; self-parking car
- Fantasy basketball player; hockey player
- video game Al(2); tetris-player(2); self-solving rubics cube
- Cleverbot (NLP); Siri; psychotherapist; question answerer
- content recommender(2); spam classifier; search engine
- song composer(2); jazz accompanist; drummer; Guitar hero player
- congressman
- automatic homework doer;



- programmable thermostat(3); maid robot(2); automated cook(2); intelligent house; beer retriever
- vending machine
- HAL 9000; anthropomorphic robot
- autonomous tank; counter-terrorist robot; exploration robot; harvester; self-parking car
- Fantasy basketball player; hockey player
- video game Al(2); tetris-player(2); self-solving rubics cube
- Cleverbot (NLP); Siri; psychotherapist; question answerer
- content recommender(2); spam classifier; search engine
- song composer(2); jazz accompanist; drummer; Guitar hero player
- congressman
- automatic homework doer; reading response generator





• You, as a class, act as a learning agent

- You, as a class, act as a learning agent
- Actions: Wave, Stand, Clap

- You, as a class, act as a learning agent
- Actions: Wave, Stand, Clap
- Observations: colors, reward

- You, as a class, act as a learning agent
- Actions: Wave, Stand, Clap
- Observations: colors, reward
- Goal: Find an optimal policy

- You, as a class, act as a learning agent
- Actions: Wave, Stand, Clap
- Observations: colors, reward
- Goal: Find an optimal policy
 - Way of selecting actions that gets you the most reward

How did you do it?



How did you do it?

- What is your policy?
- What does the world look like?