

# **CS343**

# **Artificial Intelligence**

**Prof: Peter Stone**

Department of Computer Science  
The University of Texas at Austin

# Good Morning, Colleagues

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Are there any questions?

# Logistics

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- Questions about the syllabus?

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- Class registration

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- Meeting scheduler

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- 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

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

# Environments

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Environment  $\Rightarrow$  sensations, actions

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- known vs. unknown

# Student Examples

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- game bot
- robot waiter
- bowling robot, ping pong player
- kiva robots, Mars rover, robot suturing agent
- Wall-E
- Words with friends word checker
- thermostat
- trading agent
- Siri
- Briggo
- piano playing agent
- unhappiness agent

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- **Goal:** Find an optimal *policy*

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- You, as a group, 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?

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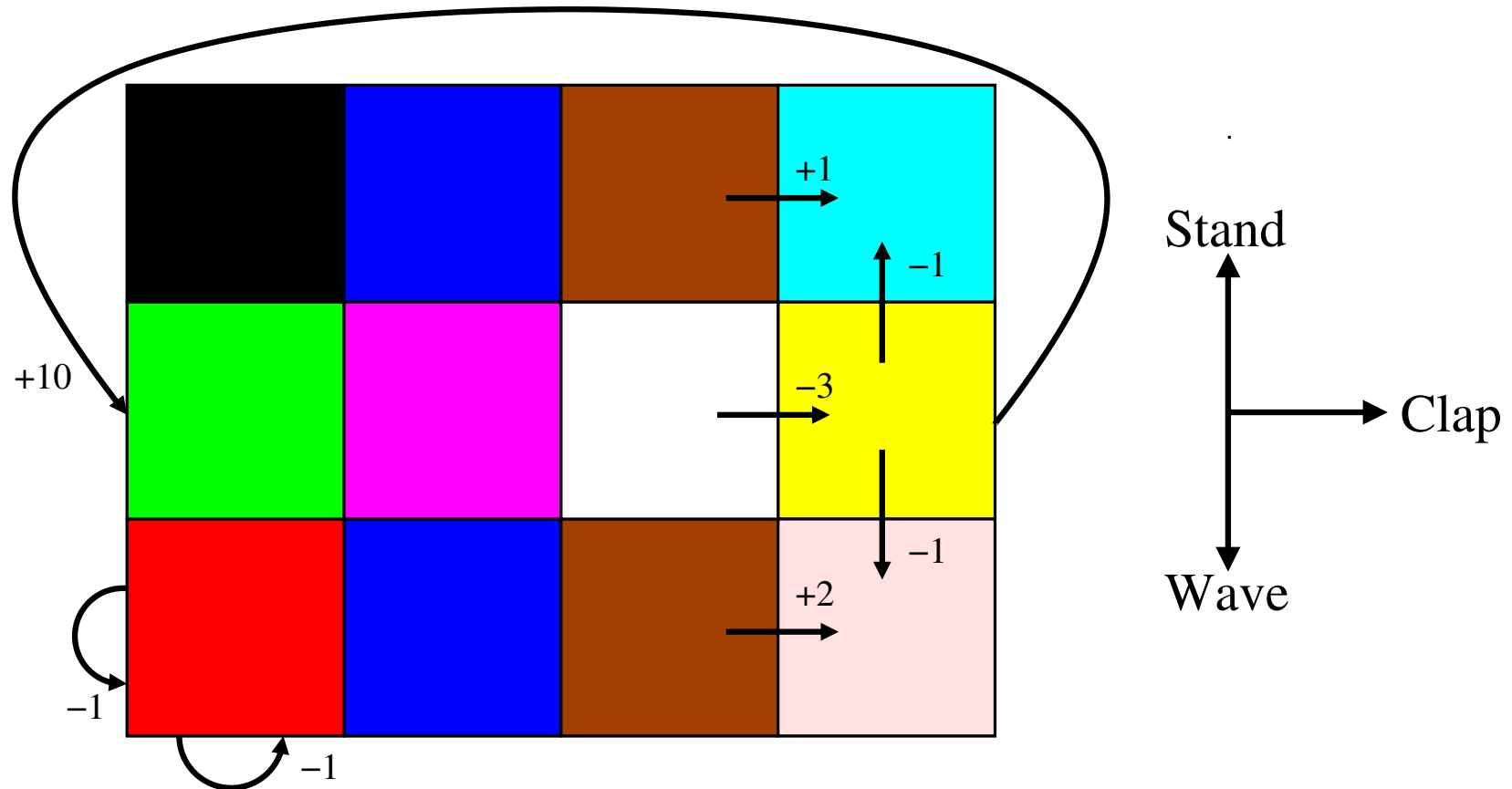
# How did you do it?

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

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- What is your policy?
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# Formalizing what Just Happened

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## Knowns:

- $\mathcal{O} = \{\text{Blue, Red, Green, Black, } \dots\}$
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$o_0, a_0, r_0, o_1, a_1, r_1, o_2, \dots$

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## Unknowns:

- $\mathcal{S} = 4 \times 3$  grid
- $\mathcal{R} : \mathcal{S} \times \mathcal{A} \mapsto \mathbb{R}$
- $\mathcal{P} = \mathcal{S} \mapsto \mathcal{O}$
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# Next week: Search

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- Textbook readings
- Responses both Monday and Wednesday
- Python tutorial due