

## RATIONAL AGENTS

### What is AI?

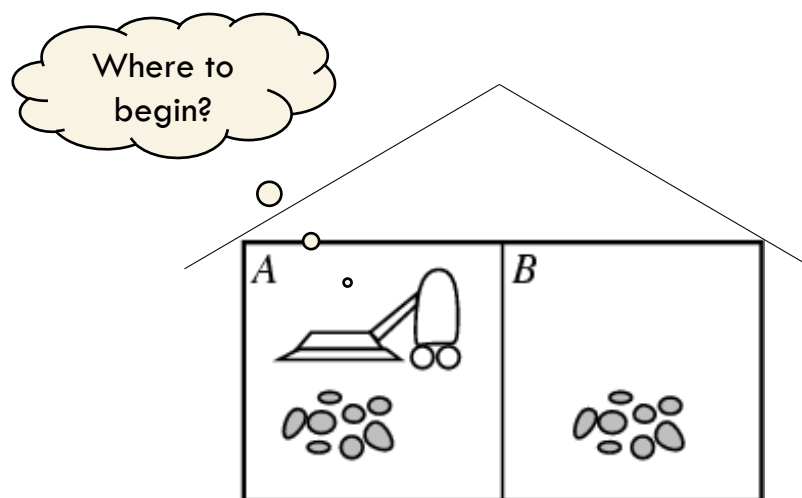
- “AI is our attempt to create a ‘machine’ that thinks (or acts) humanly (or rationally)”

<b>Think like a human</b> Cognitive Modeling	<b>Think rationally</b> Logic-based Systems
<b>Act like a human</b> Turing Test	<b>Act rationally</b> Rational Agents

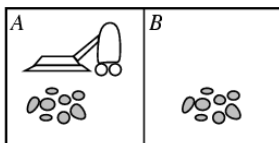
## Today

- Reading
  - ▣ Read AIMA 3.1-3.4
  
- Objectives
  - ▣ What's a rational agent?

## How do we create an intelligent vacuum?

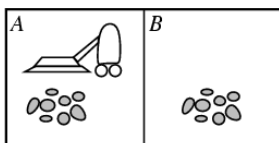


## Agents



- An **agent** is any thing that **perceives** the world through sensors and **acts** on the world through actuators.

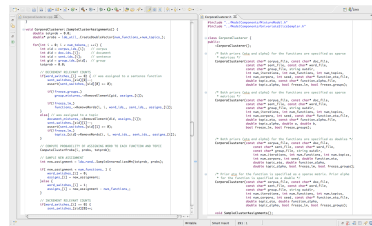
## Agents



- An **agent** is any thing that **perceives** the world through sensors and **acts** on the world through actuators.
- percepts - which room, dirt in the room
- actions - Left, Right, Pick Up Dirt, Do Nothing

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## What is rationality?



**Sing a song?**  
**Run?**  
**Smile?**  
**Run and scream?**

So what makes an agent rational?

## Rational agents

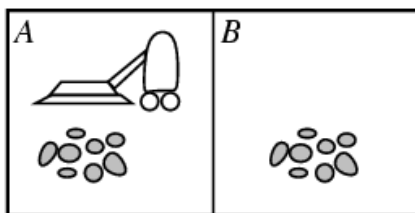
- For each percept sequence, a **rational** agent chooses an action that maximizes its **performance measure** given evidence from percept (sequence) and **prior knowledge**



~~**Sing a song**~~  
**Run**  
**Smile**  
**Run and scream**

## Rational agents

- For each percept sequence, a **rational** agent chooses an action that maximizes its **performance measure** given evidence from percept (sequence) and **prior knowledge**



## Framework for the rest of this course

Task	Action Sequence	Percepts/Prior knowledge	Performance Measure	What strategy should agent employ to maximize p.m.?
Find route to location	Set of street directions	Current location, traffic, map of area	Positive if route ends at desired location	Search
Predict patient has breast cancer	Treatment plan	mammogram, patient information	Positive if treatment plan matches patient condition	Bayesian network
Should I wait to eat at this restaurant?	Wait or don't wait?	Quality of restaurant, past behavior,...	Higher value if decision fits observed past behavior of humans	Decision tree