DID YOU SEE THE CLEVERBOT-CLEVERBOT CHAT?

I AM NOT A ROBOT. I'M A UNICORN.

Yeah. It's hilarious, but it's just clumsily sampling a huge database of lines people have typed. Chatterbots still have a long way to go.

SO... COMPUTERS HAVE MASTERED PLAYING CHESS AND DRIVING CARS ACROSS THE DESERT, BUT CAN'T HOLD FIVE MINUTES OF NORMAL CONVERSATION?

PRETTY MUCH.

IS IT JUST ME, OR HAVE WE CREATED A BURNING MAN ATTENDEE?
Towers of Hanoi

```java
public void recHanoi (int numDisks, int startTower, int targetTower, int helperTower) {
}
```

Can use
```java
public void moveDisk (int startTower, int targetTower){ }
```

- First, how handle 3 disks?
- Then, how handle n?
public void recHanoi (int numDisks, int startTower, int targetTower, int helperTower) 
{

    if (numDisks==1){
        //Base Case
        moveDisk(startTower, targetTower);
    } else {
        //Recursive Case
        recHanoi(numDisks-1, startTower, helperTower, targetTower);
        moveDisk(startTower, targetTower);
        recHanoi(numDisks-1, helperTower, targetTower, startTower);
    }
}
http://idle.slashdot.org/story/11/08/30/1410211/Cornells-Creative-Machines-Lab-Lets-Chatbots-Interact
**What is AI?**

The science of making machines that:

<table>
<thead>
<tr>
<th>Think like humans</th>
<th>Think rationally</th>
</tr>
</thead>
<tbody>
<tr>
<td>Act like humans</td>
<td>Act rationally</td>
</tr>
</tbody>
</table>
Rational Decisions

We’ll use the term **rational** in a particular way:

- Rational: maximally achieving pre-defined goals
- Rational only concerns what decisions are made (not the thought process behind them)
- Goals are expressed in terms of the **utility** of outcomes
- Being rational means **maximizing your expected utility**
MicroMort

• 1:1,000,000
  – Be paid to face?
  – How much pay to avoid?
Wager Demo

• Flip a fair coin
  – Heads: pay $2.25
  – Tails: pay $0

• How much would you pay to play?
• Why?
Up Next

• Agents that Plan Ahead
• Depth-First Search
• Breadth-First Search
• Genetic Algorithms
Reflex Agents

• Reflex agents:
  – Choose action based on current percept (and maybe memory)
  – May have memory or a model of the world’s current state
  – Do not consider the future consequences of their actions
  – Act on how the world IS

• Can a reflex agent be rational?
  – Follow right wall
Goal Based Agents

- Goal-based agents:
  - Plan ahead
  - Ask “what if”
  - Decisions based on (hypothesized) consequences of actions
  - Must have a model of how the world evolves in response to actions
  - Act on how the world WOULD BE