



# Computer Science and Games: *Just For Girls!*

Artificial Intelligence



# *The Turing Test*

**Can computers show true  
“intelligence”?**

**Will they ever be able to?**

**CS Unplugged Activity:  
Conversations With Computers**

<http://csunplugged.org/index.php/en/20-the-turing-test-activitiesmenu-127>

# *Why AI Is Important*



**Brainstorm!**

**Why do we need artificial intelligence in games?**

**How might it help us in everyday life?**



# Why AI Is Important

No human players available to compete against



[http://static.rbytes.net/full\\_screenshots/a/b/absolut-chess.jpg](http://static.rbytes.net/full_screenshots/a/b/absolut-chess.jpg)

# *Why AI Is Important*

Opponent or helper characters



<http://img70.imageshack.us/img70/7748/thelegendofzeldatwilightprincesswiiiversion20060607043vk3.jpg>

# *Why AI Is Important*

Need realistic characters for you to “get lost in the game”



<http://www.youtube.com/watch?v=FIZBKz-f6yk>

# *Why AI Is Important*

Not fun if opponents are too good



<http://i164.photobucket.com/albums/u15/eric01001/gameover.jpg>

# *AI In Games*

**How would you design an AI in a game?**

**What sort of characteristics would it have?**



# *AI In Games*

Racing: Keep the race close



<http://accordingtoheather.files.wordpress.com/2007/08/mario-kart-wii.jpg>

# AI In Games

Shooters: Easier to kill enemies than it is for enemies to kill player



<http://www.armchairempire.com/images/previews/multi-platform/james-bond-007-everything-nothing/james-bond-007-everything-nothing-2.jpg>

# *AI In Games*

Sports: Commentators, helper players



<http://mip.typepad.com/photos/uncategorized/27hockexl.jpg>

# AI In Games

Board/Puzzle: Opponent at chosen level of ability



<http://www.giveawayoftheday.com/wp-content/uploads/2007/09/3-player-grey.jpg>

# AI In Games

Adventure/Strategy: Share intelligence, path planning, strategic thinking



<http://www.armchairempire.com/images/Reviews/pc/rise-fall-civilizations-war/rise-fall-civilizations-war-2.jpg>

# Evolution



We can mimic evolution in the computer to come up with smarter characters.

[http://videlectures.net/aaai07\\_balogh\\_daevo/](http://videlectures.net/aaai07_balogh_daevo/)

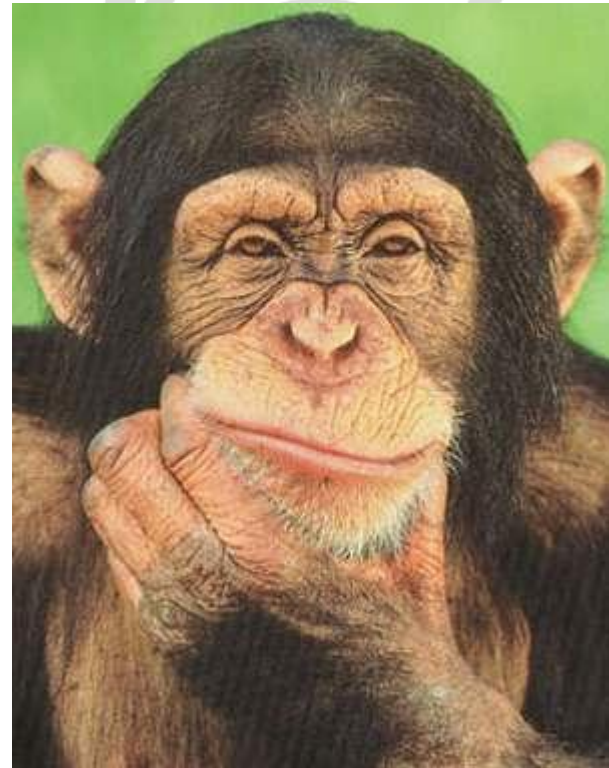


# How Games Reason

**Sense what's  
happening in the  
game world**

**Think about what  
should be done**

**Take action**



# Finite State Machines

Provide a way to think about what to do

CS Unplugged Activity: Treasure Hunt



[http://www.liptays.com/lrgimg/news\\_1139417309\\_13.jpg](http://www.liptays.com/lrgimg/news_1139417309_13.jpg)

# Credits

Notes by your instructor Gail Carmichael:

[gail.banaszkiewicz@gmail.com](mailto:gail.banaszkiewicz@gmail.com)

<http://gailcarmichael.com/>

Notes partially based on:

*Fundamentals of Game Design*, Ernest Adams and Andrew Rollings

*The Game Maker's Apprentice*, Jacob Habgood and Mark Overmars

*The Design of Everyday Things*, Donald Norman

*Gender Inclusive Game Design: Expanding The Market*, Sheri Graner Ray