

Plan for today

- Office hours
- Discussion of Lightbot lessons
- Self-driving cars
- Artificial Intelligence and how computers play chess
- Introduction to programming in Processing and Lab 2.
- Discussion of Blown To Bits Reading

The Future of the Auto Industry?

Pluses

Minuses/Concerns

Artificial Intelligence: The study of making computers act intelligently.

- Fact of life in computing: hardware is “dumb”
- Forces us to make nebulous concepts precise
 - What is an obstacle? Music?
 - How do we navigate the world?
 - How do we recognize objects?
 - How do we play games like chess?



Running theme in this course

Artificial Intelligence

- Playing grandmaster level chess in a tournament became an AI goal (1952)
 - Limited real world knowledge
 - Clear goal, formal system
 - But seems to require “genuine” intelligence

Deep Blue versus Kasparov

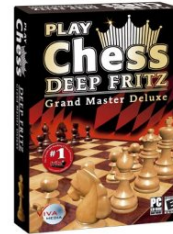
- An IBM System, Deep Blue, played world champion Gary Kasparov
 - In 1996 Kasparov won, but Deep Blue played 1 game well!!!
 - On May 11, 1997, Deep Blue won 3.5-2.5
- Deep Blue -- a 32 processor parallel computer with 256 “chess processors” that could consider 200,000,000 chess positions per second + opens + ends



Deep Blue 1997



So what's the essential idea for how a computer plays chess?



Deep Fritz, 2002

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Augmented Intelligence

Can computers think?

- “Whether a computer can think is about as interesting as whether a submarine can swim.”
Edsger Dijkstra

Blown to Bits, Chapter 1
Digital Explosion: *Why is it Happening, and What is at Stake?*

- 7 Koans

“We call them ‘koans’ because they are paradoxes, like the Zen verbal puzzles that provoke meditation and enlightenment.

These koans are oversimplifications and over-generalizations.”

Questions: what is the koan? What, if any is the paradox? What issues/questions does it raise?

1. It's all just bits
2. Perfection is normal
3. There is want in the midst of plenty
4. Processing is power
5. More of the same can be a whole new thing
6. Nothing goes away
7. Bits move faster than thought.