Lecture 1: Introduction

CPS 480/ CPS 580 Artificial Intelligence
Ju Shen, Spring 2020

Course Information

- Instructor: Ju Shen
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  - Office Hours: Mon: 11:00 am – 12:00 pm
    Wed: 11:00 am – 12:00 pm
    other time is available by appointment
  - Office Location: Anderson Center 144
  - Resource: lecture notes and other materials available on the web

- Communication: ISIDORE -> Spring 2020 CPS 480

Course Prerequisites

- Programming skill, C/C++
- Some knowledge of data structure
- Mathematics and probability background (optional)
- Some knowledge of algorithm

Grading Policy

Factors:

Class Participation (attendance, In-class quiz, class discussion) 15%

Homework/Projects 30%

Midterm Exam 25%

Final Exam/Project 30%

Assignment Submission

Assignments can be submitted through ISIDORE

Late Turn-ins:

1 day delay (within 24 hours after the deadline) 20% off

2 days delay (within 48 hours after the deadline) 30% off

3 days or more 50% off

Assignments will not be accepted later after the solution is posted

Course Materials

- Lecture Slides
- Additional Readings (available on the website)
- Text Book: “Artificial Intelligence: A Modern Approach,” (2nd or 3rd Edition) Stuart Russell and Peter Norvig, Prentice Hall, 2003.

  Book’s website http://aima.cs.berkeley.edu/

General Comments

- Encouragement to ask questions during class
- Encouragement to read course material prior to class

Course Goals

After this course you will:

- Understand the fundamentals of AI
- Design and build simple AI systems
- Read AI literature
- Be more intelligent yourself!

What is Artificial Intelligence ?

“the science and engineering of making intelligent machine”

- John McCarthy, 1955

“AI is the intelligence exhibited by machines or software. It is also an academic field of study ”

- Wikipedia

What is Artificial Intelligence?

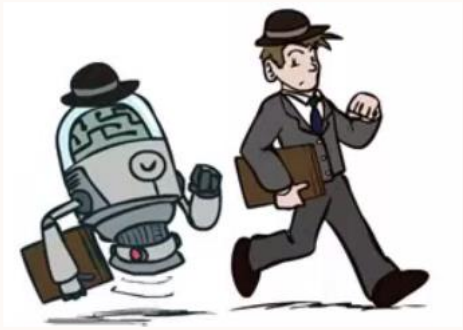
Clever	Intelligent	Smart
Nature, Hardware	Knowledge, experience, logic	Style, appearance! Nothing to do with computer

AI History

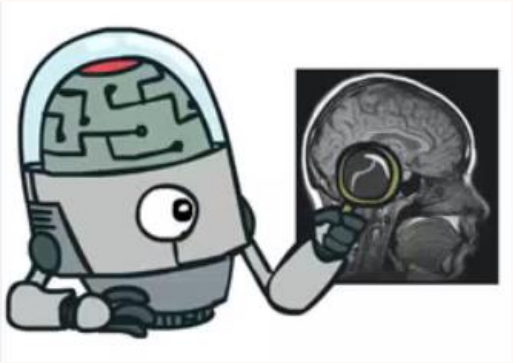
- 1956 – Birth of AI
  Dartmouth 1956 workshop for 2 months
  - Term “artificial intelligence”
  - Fathers of the field introduced
- 1950 – 1970 Excitement
  - Samuel’s Checker program, Gelernter’s Geometry Engine…
  - 1956 Robinson’s complete algorithm for logic reasoning
- 1970 – 1990 Knowledge-based approaches
  - 1969-1979 Early development of knowledge-based systems
  - 1980-1988 Industry blooms of expert systems “AI winter”
- 1990 – Statistical approaches
  - General increase in technical depth, focus on uncertainty
  - 1980-1988 Agent and learning systems, … “AI spring”
- 2000 – You will define it!

AI software or hardware?

Act like people



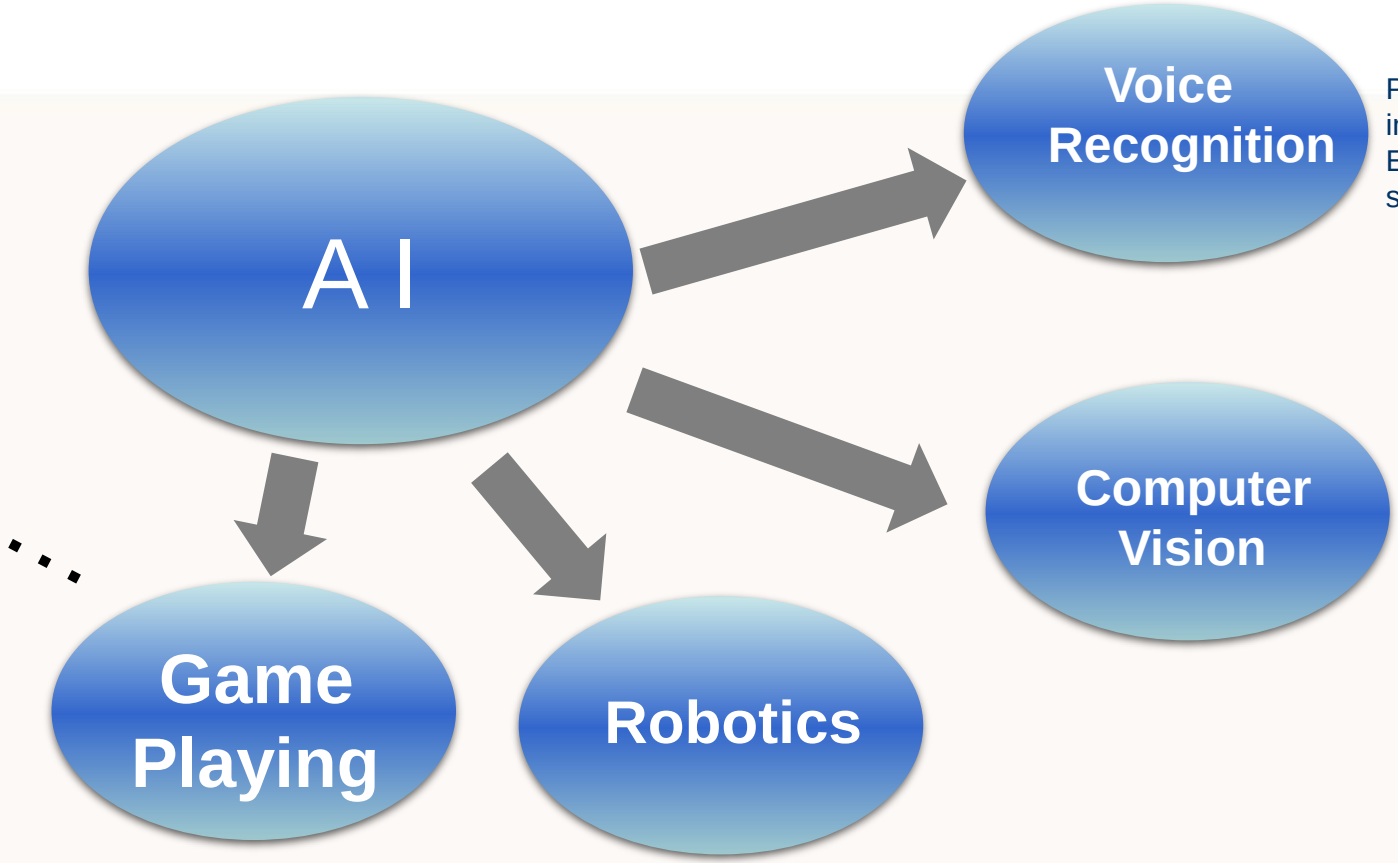
Think like people



What can AI provide?

- Find efficient way to solve problems.
- Learn new things and formalize knowledge.
- Apply computational models to understand complex things.
- Build theory foundation for a broad range of applications

What does AI do?



PEGASUS spoken language interface to American Airlines' EAASY SABRE reservation system

- Face recognition programs in use by banks, government, etc.
- Handwriting recognition,
- Xbox 360 – body recognition

Job Markets

Programmer + AI = Senior Programmer, or Even higher

- Game Industry
- Intelligent Web Services: auto-categorization of Web-based pictures
- Financial Decision: Improving prediction of daily revenues and staffing requirements for a business
- Heath Care recognize surgeon's activity, imaging
- Researcher in CS

What is the core problem in AI?