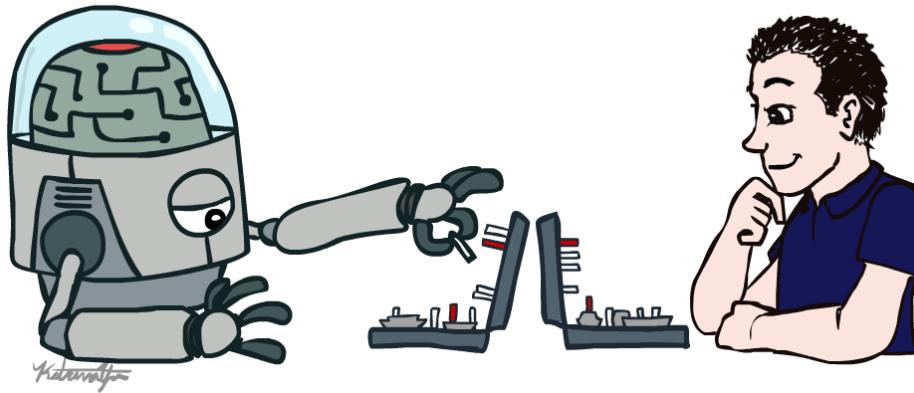


# CS 263: Artificial Intelligence

## Introduction

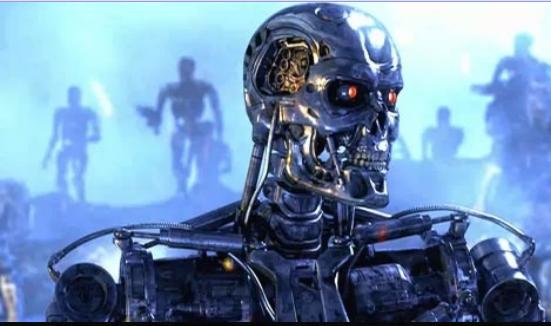


Instructor: Malak Abdullah

Summer 2020

(slides adapted from University of California, Berkeley)

# Sci-Fi AI?







TUG  
CAUTION  
MAY CONTAIN  
CHEMOTHERAPY DRUG

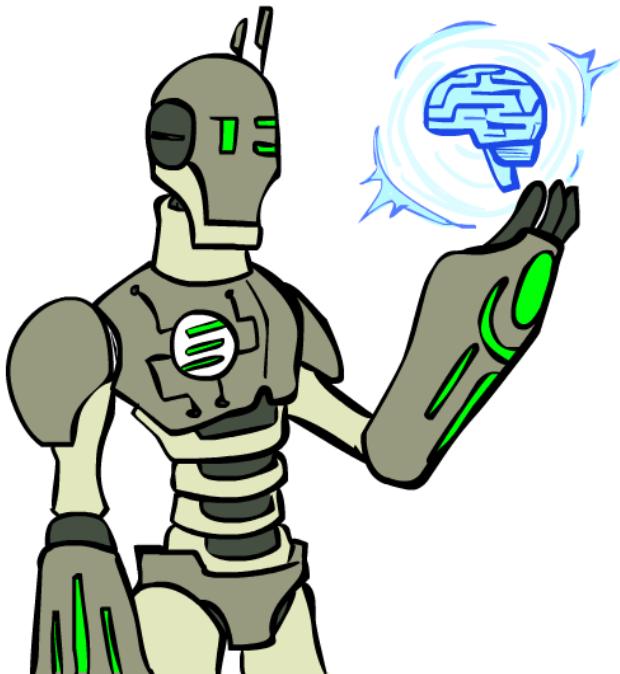
CAUTION  
MAY CONTAIN  
CHEMOTHERAPY DRUG



# Today

---

- What is artificial intelligence?
- What can AI do?
- What is this course?



# What is AI?

---

The science of making machines that:

# Rational Decisions

---

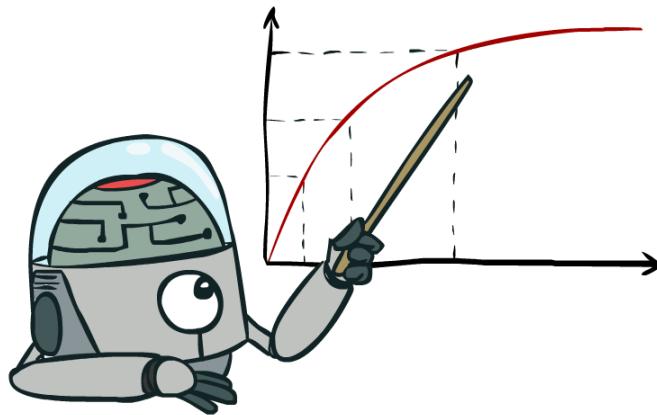
We'll use the term **rational** in a very specific, technical way:

- Rational: maximally achieving pre-defined goals
- Rationality 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**

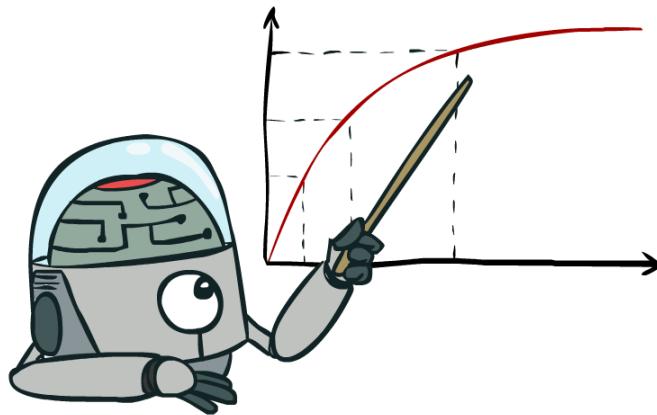
A better title for this course would be:

**Computational Rationality**

# Maximize Your Expected Utility



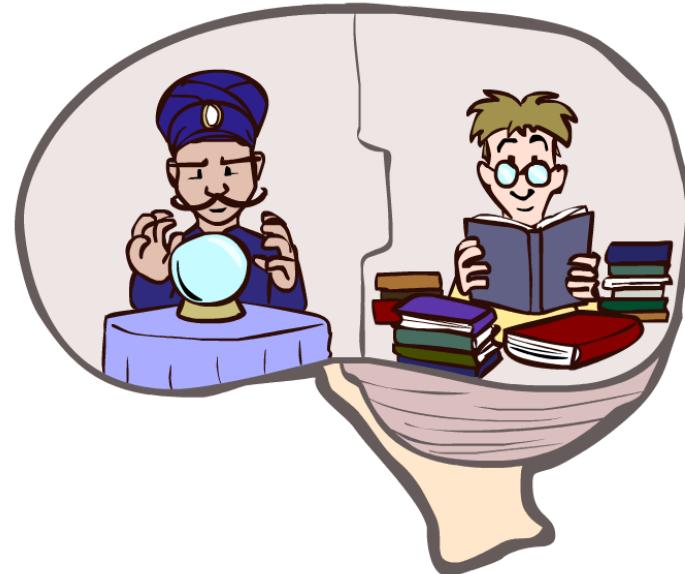
# Maximize Your Expected Utility



# What About the Brain?

---

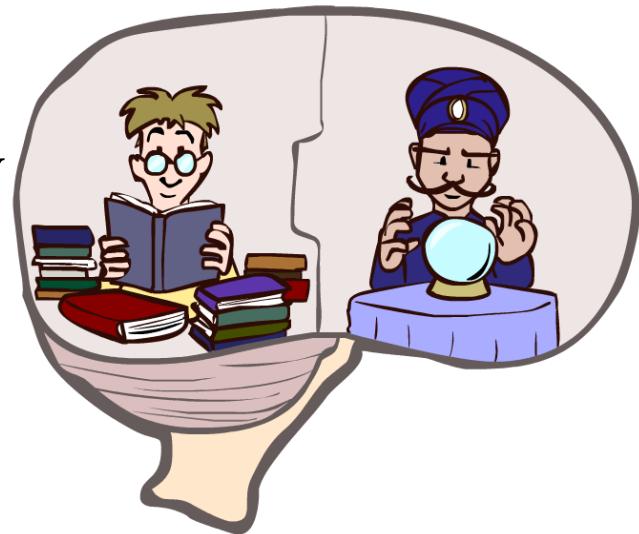
- Brains (human minds) are very good at making rational decisions, but not perfect
- Brains aren't as modular as software
- "Brains are to intelligence as wings are to flight"
- Lessons learned from the brain: memory (data) and simulation (computation) are key to decision making



# Course Topics

---

- Part I: Making Decisions
  - Fast search / planning
  - Adversarial and uncertain search
- Part II: Reasoning under Uncertainty
  - Bayes' nets
  - Decision theory
  - Machine learning
- Throughout: Applications
  - Natural language, vision, robotics, games, ...



# Logistics!

---

# Welcome

---

To CS 263 (Artificial Intelligence) offered by Computer  
Science Department!

# Course Instructor

---

## ❖ Dr. Malak Abdullah

❖ Ph.D. in Computer Science from UNC-Charlotte, USA 2018

❖ Area of interests:

- ❖ Programming languages (mainly: C++, Java, Python, R)
- ❖ Data Science
- ❖ Natural Language Processing
- ❖ Machine Learning
- ❖ Deep Learning
- ❖ Sentiment and Emotion Detection
- ❖ Social Network Analysis

❖ Coached JUST teams for ACM programming competitions (2011-2014)

- website: <https://sites.google.com/view/malak-abdullah>
- Office hours: To be announced later (TBAL)



# E-Learning

---

- ejust E-learning
  - Slides
  - Announcements
  - Quizzes
  - Lab assignments
- We will use Berkeley and Harvard materials for this course
  - <http://inst.eecs.berkeley.edu/~cs188/su20/>
  - <https://cs50.harvard.edu/extension/ai/2020/spring/>

# Facebook

---

- Communication:
  - Facebook group MLKStudentsSummer2020
    - ask and answer questions; announcements
  - private matters – private messages on facebook
    - if your message is not answered promptly enough, email me
      - [mabdullah@just.edu.jo](mailto:mabdullah@just.edu.jo)

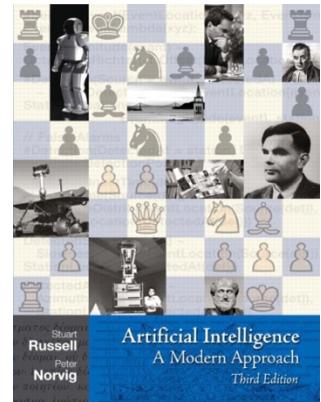
# Microsoft Teams

---

- No recording for the lectures
- If you need to watch a recorded lecture, go to  
<https://cs50.harvard.edu/extension/ai/2020/spring/>
- Our lectures Sun-Mon-Tue-Wed at 11:30
  - <https://teams.microsoft.com/l/team/19%3ac66befa290c6449290a8c8289aa3dae6%40thread.tacv2/conversations?groupId=1732721c-b720-4a2c-9c74-da375972aeaa&tenantId=2f51b395-12e6-42a3-b2b8-2faf7d4c62a2>
- No more than 5 abs, We want you to show up!

# Textbook

- For students who want to read more:
  - Russell & Norvig, AI: A Modern Approach, 3<sup>rd</sup> Ed.



## TextBooks and References

We will have more than one book:

<b>Text book1</b>	Artificial Intelligence: A Modern Approach, / <u>Stuart Russell, Peter Norvig</u> .
<b>Text book2</b>	Hands-on Machine Learning with <u>Scikit-Learn &amp; TensorFlow</u> : Concepts, Tools, and Techniques to Build Intelligent Systems by <u>Aurelien Geron</u>
<b>Text book3</b>	To be announced later
<b>Text book4</b>	To be announced later

# Programming Language

---

## Software

Programming experience in Python is strongly recommended for this course. Please work through the following tutorial if you do not have programming experience:

1. <https://docs.python.org/3/tutorial/>
2. Python Tutorial

## Teaching Assistant

Enas Bani Younis

chbaniounis@just.edu.jo

Give you hands-on experience with the algorithms

# HomeWorks 20 %

---

- Homework (electronic)
  - Due at midnight (11:55 pm)
  - Exercises based on class material
  - Get you comfortable with the basics
  - Solve together, submit **alone**
    - Academic integrity!
  - Lowest score is automatically dropped
  - Late policy: -20% for each day late

# Exams 70 %

---

- Exams
  - No First/Second/Mid exams ☺
  - Quizzes 20 %
    - On E-learning every Thursday or Saturday at 11 am
  - Final 50%
- **Exams are the main assessment tool, so they are hard**
  - You must attend the final exam in order to pass this course.

# Attendance 5%

---

- You can have one abs without deducting grades
- For each abs -1.5
- Exceed 5 abs → محروم بسبب الغياب ☹

# Participation 5%

---

- Present something cool about AI for 10 min ☺
- You can record a video and upload it on YouTube
- Or build a good game/ agent that competes to win