

Artificial Intelligence: An Introduction

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Your Course Teacher

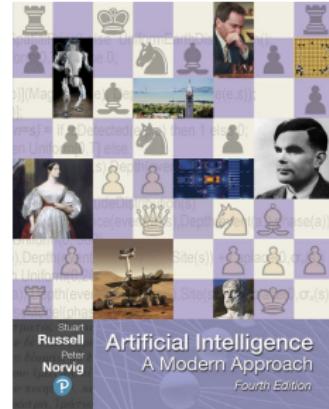
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- Research Interests:
 - Applied Machine Learning
 - Artificial Intelligence Search
 - Computational Biology



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Grading and Textbook

- Lab - 20%
- Assignments - 10%
 - 4 assignments
- Quiz - 15%
 - Best 3 out of 4
- Mid Exam - 25%
- Final Exam - 30%



- Artificial Intelligence: A modern Approach Stuart Russel & Peter Norvig



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What is AI?

- Artificial intelligence (AI) is the simulation of human intelligence processes by machines, especially computer systems.
- These processes include learning (the acquisition of information and rules for using the information), reasoning (using rules to reach approximate or definite conclusions) and self-correction.
 - Represent and store knowledge
 - Retrieve and reason about knowledge
 - Behave intelligently in complex environments
 - Develop interesting and useful applications
 - Interact with people, agents, and the environment
- Could an intelligent agent living on your home computer manage your email, coordinate your work and social activities, help plan your vacations. . . . even watch your house while you take those well planned vacations?



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What is AI?

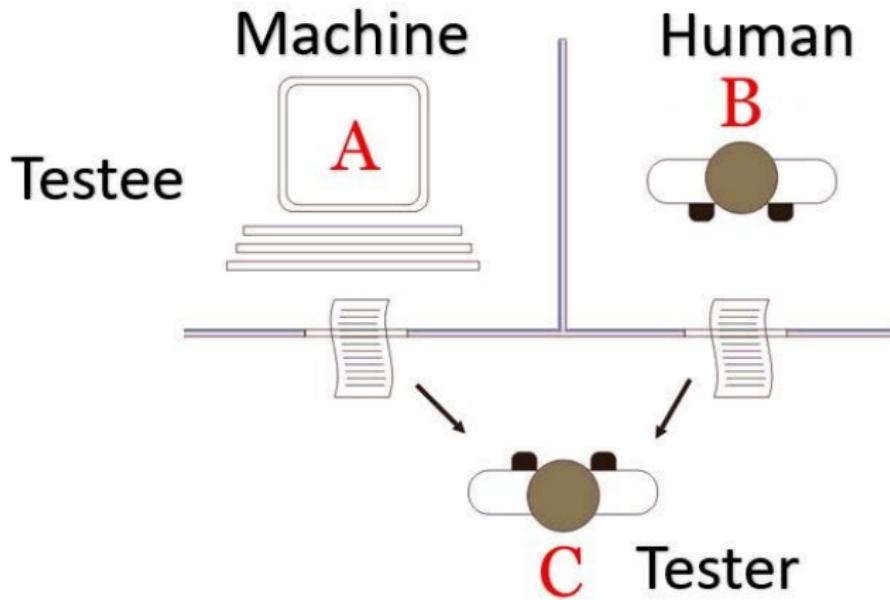


THINK LIKE HUMANS	THINK RATIONALLY
ACT LIKE HUMANS	ACT RATIONALLY



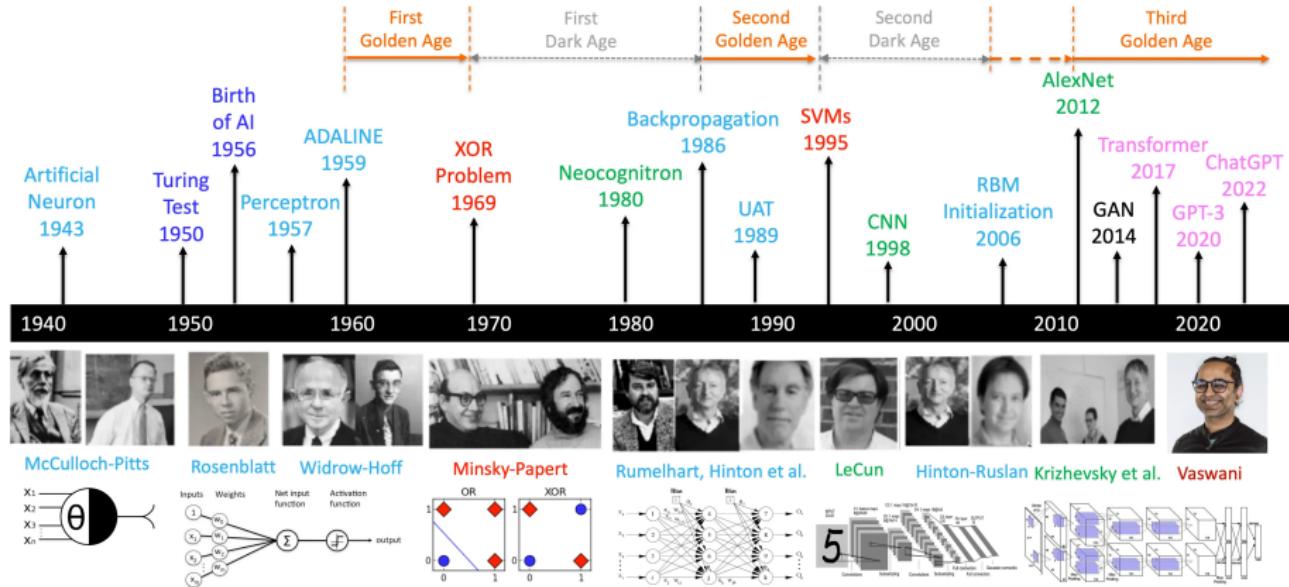
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Turing Test



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AI History



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Some Applications

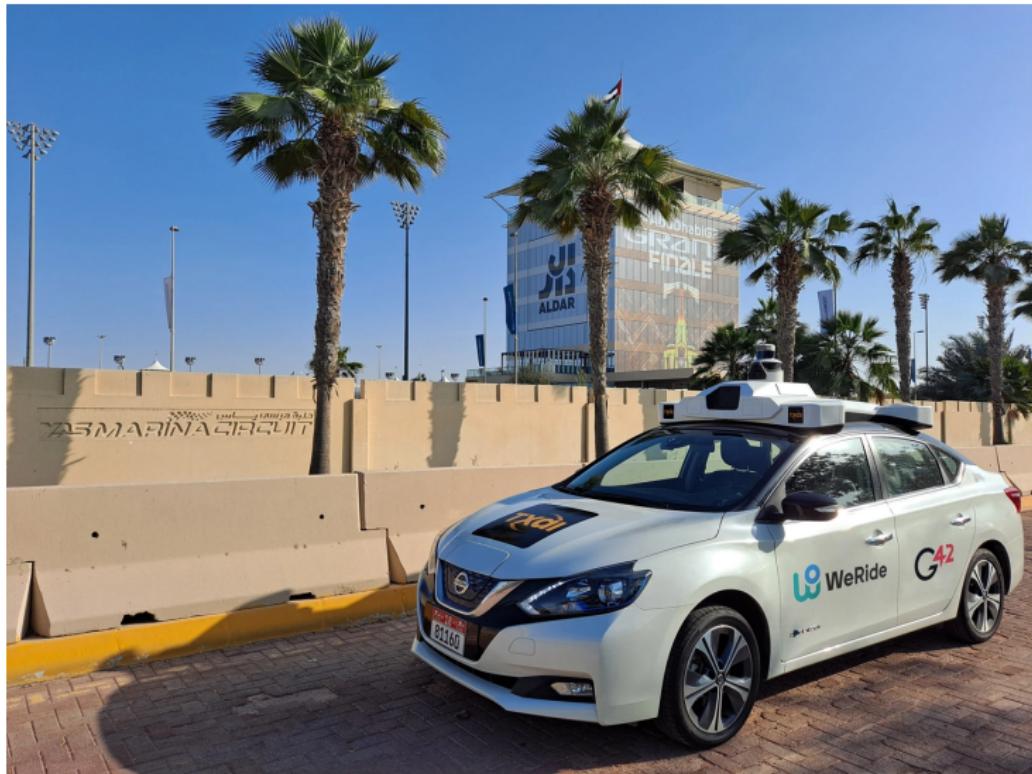


- <https://www.youtube.com/watch?v=JoP1lvgLys>



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Some Applications



Some Applications



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Some Applications



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Some Applications

Apple wants to replace 50% of its iPhone factory workforce with robots

News

By [Oliver Haslam](#) published June 24, 2024

People out, robots in.



Comments (11)

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Will AI replace apparel workers?

The progress of AI-powered technology, albeit in its early phase, is unsettling to some. With recent announcements in the international retail market indicating an 'AI rush,' we look at where things stand in Bangladesh



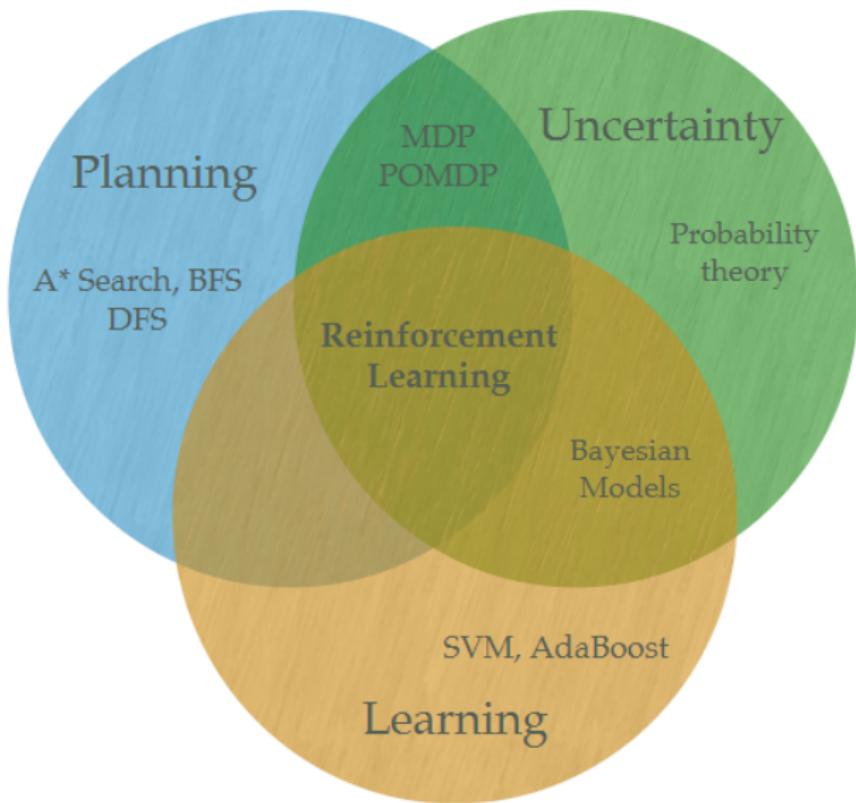
Some startups are trying hard to come up with working models, or Sewbots, that can handle the delicate job of sewing. However, experts say it is not a match for apparel workers. Photo: Collected



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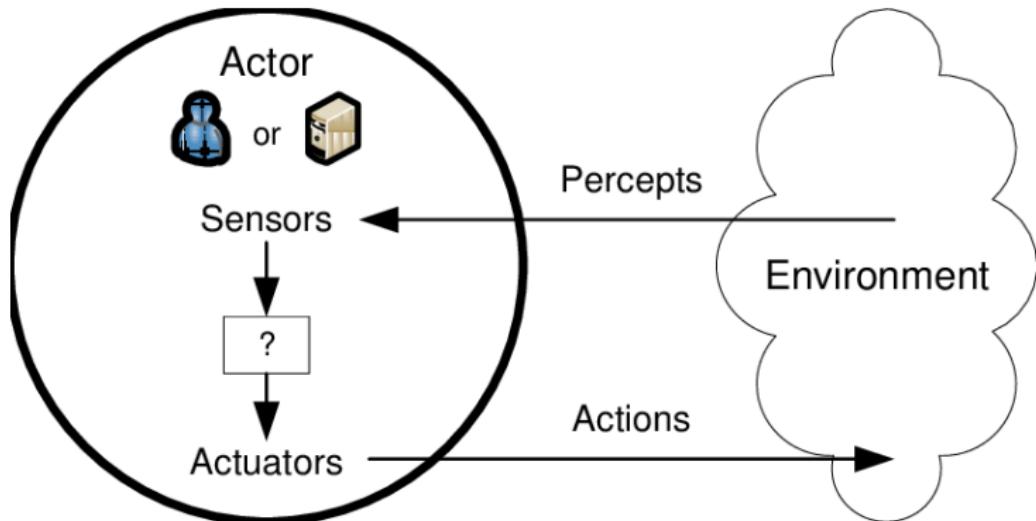


AI Branches



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An AI Agent



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PEAS: Automated Taxi Driver

- Performance Measure (P)
 - safety, destination, profits, legality, comfort
- Environment (E)
 - streets/freeways, traffic, pedestrians
- Actuators (A)
 - steering, accelerator, brake, horn, speaker / display
- Sensors (S)
 - video, accelerometers, gauges, engine sensors, keyboard, GPS



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PEAS of an AI Agent

Agent Type	Performance Measure	Environment	Actuators	Sensors
Medical diagnosis system	Healthy patient, reduced costs	Patient, hospital, staff	Display of questions, tests, diagnoses, treatments	Touchscreen/voice entry of symptoms and findings
Satellite image analysis system	Correct categorization of objects, terrain	Orbiting satellite, downlink, weather	Display of scene categorization	High-resolution digital camera
Part-picking robot	Percentage of parts in correct bins	Conveyor belt with parts; bins	Jointed arm and hand	Camera, tactile and joint angle sensors
Refinery controller	Purity, yield, safety	Refinery, raw materials, operators	Valves, pumps, heaters, stirrers, displays	Temperature, pressure, flow, chemical sensors
Interactive English tutor	Student's score on test	Set of students, testing agency	Display of exercises, feedback, speech	Keyboard entry, voice



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Environment Types

Task Environment	Observable	Agents	Deterministic	Episodic	Static	Discrete
Crossword puzzle	Fully	Single	Deterministic	Sequential	Static	Discrete
Chess with a clock	Fully	Multi	Deterministic	Sequential	Semi	Discrete
Poker	Partially	Multi	Stochastic	Sequential	Static	Discrete
Backgammon	Fully	Multi	Stochastic	Sequential	Static	Discrete
Taxi driving	Partially	Multi	Stochastic	Sequential	Dynamic	Continuous
Medical diagnosis	Partially	Single	Stochastic	Sequential	Dynamic	Continuous
Image analysis	Fully	Single	Deterministic	Episodic	Semi	Continuous
Part-picking robot	Partially	Single	Stochastic	Episodic	Dynamic	Continuous
Refinery controller	Partially	Single	Stochastic	Sequential	Dynamic	Continuous
English tutor	Partially	Multi	Stochastic	Sequential	Dynamic	Discrete



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