



Artificial Intelligence

(CS F407)

What is AI?

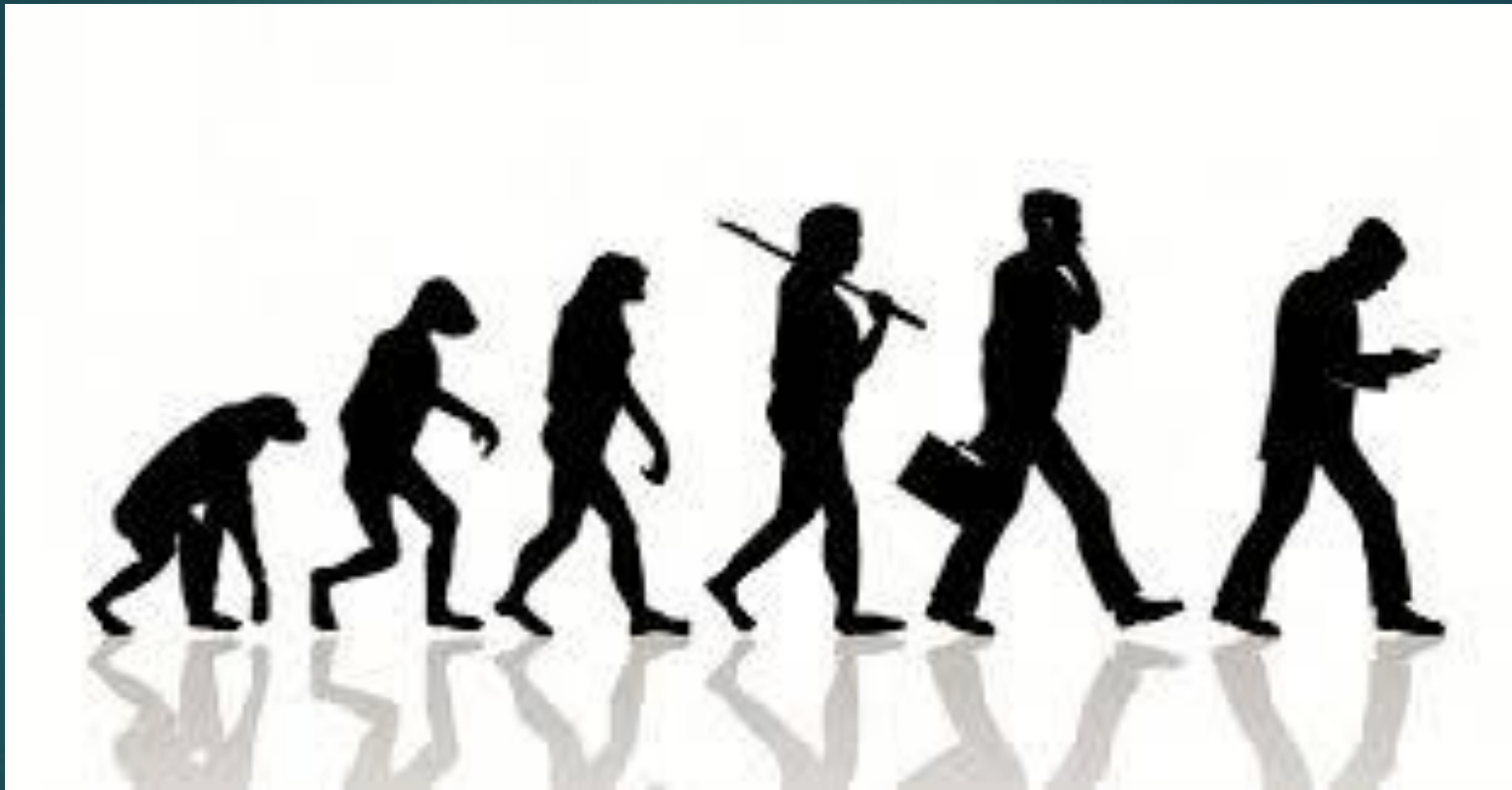
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Homo sapiens--man the wise

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What is Intelligence?

- Intelligence is the ability to think, to imagine, to create, memorize, understand, recognize patterns, make choices, adapt to change and learn from experience.
- Intelligence is a property of mind that encompasses many related mental abilities, such as the capabilities to:
 - reason
 - plan
 - solve problems
 - think abstractly
 - understand ideas and language
 - learn

What is AI?

- AI is the study of how to make computers do things which at the moment people do better.

Think like humans “cognitive science” E.g. <i>General Problem Solver</i> [Newell&Simon 61]	Think rationally => formalize inference process (laws of thought)
Act like humans E.g., Eliza, Turing test	Act rationally Also, bounded rationality.

ELIZA

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(1964-66) MIT Artificial Intelligence Laboratory by Joseph Weizenbaum

Rogerian psychotherapist

File Edit Options Buffers Tools Help

I am the psychotherapist. Please, describe your problems.
Each time
you are finished talking, type RET twice.

I have a terrible headache.

Maybe you should consult a doctor of medicine, I am a psychiatrist.

Okay, I'll do that then.

Can you elaborate on that?

What are you talking about later.

Why do you say that?

Now you're just talking nonsense.

What makes you believe now?

You are not making any sense.

Perhaps your plans have something to do with this.

-u:** *doctor* (Doctor Fill)--L1--Top-----

<http://psych.fullerton.edu/mbirnbaum/psych101/Eliza.htm>

Turing (1950) "Computing machinery and intelligence"

Predicted that by 2000, a machine might have a 30% chance of fooling a lay person for 5 minutes.

Achieved. (Google Pixel's Allo! 😊)

(Source: Wiki)

ALICE-1990

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A.L.I.C.E. and Chittaranjan

You said: who gave you this name

A.L.I.C.E.: My botmaster is Dr. Richard S. Wallace.

You say:

Say

Listen to two bots talking to each other!

Conversation Log:

Chittaranjan: what is the date today

ALICE: Monday, January 08, 2018.

Chittaranjan: what is the Indian population

ALICE: 2.5 million.

Chittaranjan: where is India situated

ALICE: Do a web search for it.

Chittaranjan: my name is chittaranjan

ALICE: That's a very nice name, Chittaranjan.

Chittaranjan: what is your name

ALICE: ALICE.

Chittaranjan: who gave you this name

ALICE: My botmaster is Dr. Richard S. Wallace.

<http://alice.pandorabots.com/>

START

Natural Language Question Answering System

where is India



Ask Question >

==> where is India

India



Location:

Southern Asia, bordering the Arabian Sea and the Bay of Bengal, between Burma and Pakistan

Source: [The World Factbook](#)

Available maps:

Click on [the map of India](#) if you want to see it.

Source: START KB

[Back to home page](#)

Your first assignment will be to develop a
Chabot using AIML in Python.

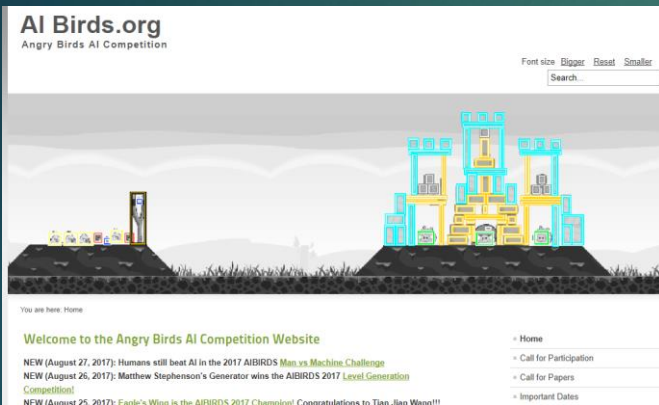
Goals of AI

- Understanding of computational mechanisms needed for intelligent behavior
- Intelligent connection of perception and action
- Solve knowledge-intensive tasks
- Enhance human-computer interaction

Applications of AI

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- Game Playing

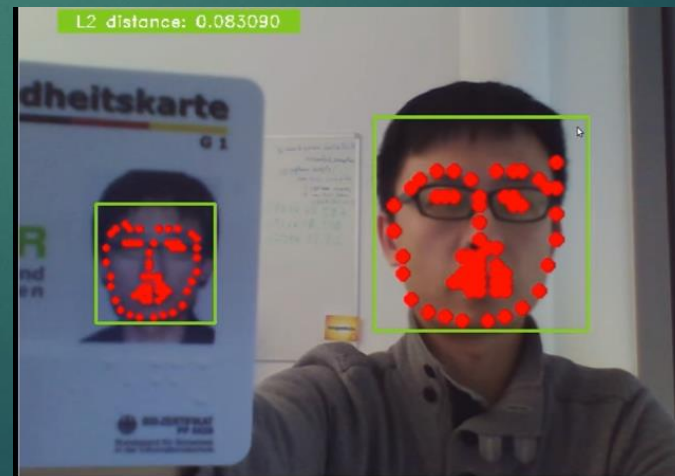


<https://deepmind.com/research/alphago/>

Deep blue



- Computer Vision



Continued...

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- Natural Language Understanding

how are you आप कैसे हैं

- Scheduling and Planning

Ford Automaker relieves burden of scheduling worker assignments with AI software (2011)

- Robotics and Path planning



AcYut, BITS
Pilani



iRobot Packbot used
in Afghan and Iraq
wars

- Home appliances using fuzzy logic



- and...

Course outline

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- Search
 - Blind and Heuristic search
 - Game playing
 - Planning
- Knowledge representation and reasoning
 - Propositional logic
 - Predicate logic
 - Resolution by refutation
- Reasoning under uncertainty
- Natural language understanding
- Machine learning
 - Supervised learning (= learning from examples)
 - Reinforcement learning (= learning by reinforcement)

Evaluation Scheme

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Sl No.	Component & Nature	Duration	Weightage	Date and Time
1.	Coding Assignments (Take Home, Three Numbers)	*	30%	---
2.	Announced Quizzes (Two)	30 mins	10%	---
3.	Mid sem Test (Closed Book)	1.5 hr	25%	06/03 3.30 – 5.00
4.	Comprehensive Exam (Part Open)	3 hrs	35%	04/05 AN

Chamber Consultation hour: Tuesday (4-5 pm, B224)

