- What is AI?

- Introduction to AI

- Total 4 credits for this subject

- Practicals based on python

- Oral and Practical examination

- No Mini project

- Imeediate checking in practicals

- 75M theory + 25M TT = 100

- Total 6 units. (1-KW, 2...5-CB, mostly 6-KW)

COURSE OUTCOMES:

- Learn about intelligent agents

- Techniques of these agents.

- Application of AI is to represent approaches and knowledge

- Real world use cases of AI

- Look at BFS and DFS via AI

- Some specific AI search functions

- Optimize these agents and learn diff algorithms

- AI agent should be able to capture knowledge and give solution based on a reasoning

- Uncertainity

- Plan methods of deciding a searching agent.

- Introduce ML

- AI is either NLP or autonomous bot or recommender systems or games

- ELaine RIch and Kevin Knight is good for reading like a storybook

- Russell and Norvig 2nd edition is great for understanding

- PROLOG is for practicals

WHAT IS AI?

- Simulation of Human Intelligence

- Solve problems like humans

- Man made intelligence for humans

- Self-correction and reasoning like humans

- Make a computer make decisions

- Think and act like a human

- Should make rational decisions.

Defn: Thinking humanly, acting humanly, thinking rationally, acting rationally.

- How it thinks like a human and acts like a human

DIFFERENT APPROACHES TO THINK & ACT LIKE A HUMAN:

- ACTING HUMANLY

- Turing test by Alan Turing (1950)

- Differeniate between the machine answers and human answers

- This will prove it to be an intelligent machine.

- Should have NLP to communicate successfully

- Store info and use it

- ML to adapt to new environments and learn continuously

- CV to see like humans

- Robotics to manipulate objects physically

- THINKING HUMANLY

- Introspection: Start following your thoughts

- Create psychological experiments to focus on one detail at a time.

- Combination of AI + experimental psychology

- THINKING RATIONALLY

- Make rational/ideal approach

- Aristotle said " Socrates ia a man. All men are mortal. Therefore I can say Socrates is mortal"

- Laws of thought = LOGIC

- Logic is what you apply to certain factors

- Difficult to represent informal language in something formal.

- Difficult to generalize logic

- ACTING RATIONALLY:

- Agent (Software/Machine/etc) has to take a rational approach

- Agent should achieve best expected/possible outcome. Should always give some outcome and not stop due to lack of info.

- Acting rationally vs acting correctly.

- ADV: More generalized that Laws of thought and more amenable to scientific development than humans.



18/09/2021

An agent for Rubiks cube should be

* Able to sense the colours via cameras.
* Twisting and turning will count as actions
* Environment is the Rubiks cube current state
* Store the percepts sequence to take future actions

Table

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How to access agents behaviour? **PEAS Properties**

Text, letter

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**Text, letter

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**FULLY OBSERVABLE:**

* + **Knows Everything.**
  + **Agent does not need to keep track of state**
  + **Doesn’t exist**

**PARTIALLY OBSERVABLE:**

* + **Exists**
  + **Partial due to noise or inaccurate sensors**
  + **E.g Taxi driver doesn’t know what other drivers are thinking**

**Graphical user interface, text, application

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**Text, letter

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**Diagram, schematic

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**Text, letter

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**PROBLEM:**

* **In Simple reflex:**
  + **Its Static**
  + **You need a fully observable environment**
* **Model Based Reflex agent**
  + **It keeps track of entire thing. What it can see and also what it is unable to see. Such as, in car it knows what are the blind spots too**
* **Goal Based Agent**
  + **Gives Purpose/goal to the agents**
  + **Search and Planning are required to achieve goals**
  + **Decision making involves consideration of time**
  + **Less efficient but more flexible and can be modified according to location**
* **Utility based agents**
  + **Goals cant generate high quality behaviour**
  + **Utility function maps a state to a real number – degree of happiness**
  + **Allows rational decision where goal is inadequate: in conflicting goals that can be achieved**
* **Learning Agent**
  + **Allows agent to operate in unknown environment**
  + **Text, letter

    Description automatically generated**
* **Text, letter

  Description automatically generated**