

Artificial Intelligence

Assignment – 1

1)

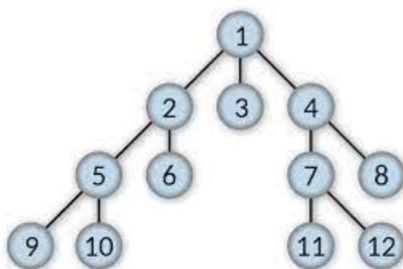
- a. List the real-world applications of AI that you use.
 - > We quite often encounter AI in everyday life i.e. we use different voice assistance for making our daily life easier.
 - > Any activity which makes our life easier and machine that can use its own intelligence can be part of AI.
 - > E.g. Face Recognition, Chatbots, auto-correct, auto-complete, search and recommendation algorithms, google maps, and many others are there.
- b. State and explain the popular dilemma encountered while designing AI systems.
 - > We commonly face ethical dilemma while designing AI systems. For e.g., Self-Driving Cars, Lethal Autonomous Weapons, etc.
 - > We may face unemployment due to autonomous of work previously done by humans and this can be to extent we can never imagine.
 - > There may be misuse of AI which if it comes in wrong hands, it can be very dangerous.
 - > Then comes deep fake which tarnishes the image of original speaker as the video maker may make him say anything they want.

2)

- a. Case Study: GitHub co-pilot
 - Elaborate the problem, problem space and the search technique used in GitHub Co-pilot.
 - > Basically, in GitHub co-pilot, we give or define the problem and it suggests us the code. It is very efficient for small codes like adding two numbers and programs which are related to do a single function.
 - > It can't replace software developers job but definitely can reduce the workload for them.
 - > It tries to suggest us the code from major websites like stack overflow and can also develop its own intelligence and generates its own code taking main logic from somewhere.

3)

- a. Differentiate between uninformed and informed search with an example.
 - > Uninformed Search uses Blind Search while Informed Search uses Heuristic Search
 - > Uninformed Search may take time for finding the solution while Informed Search takes very less time for searching the solution.
 - > Uninformed Search's Cost is very high due to its nature while Informed Search's Cost is very low.
 - > Uninformed Search's Examples: DFS, BFS, Branch and Bound
 - > Informed Search's Examples: Greedy Search, A* Search, AO* Search, Hill Climbing Algorithm
- b. Analyse the working of DFS and BFS. For both the search techniques, give an example problem where the use of the technique is better over the other.
 - > BFS - Breadth First Search (BFS) algorithm traverses a graph in a breadth ward motion and uses a queue to remember to get the next vertex to start a search when a dead end occurs in any iteration. BFS is better when target is closer to source.
 - > DFS - Depth First Search (DFS) algorithm traverses a graph in a deapthward motion and uses a stack to remember to get the next vertex to start a search when a dead end occurs in any iteration. DFS is better when target is far from the source



In above image if we want to find 4 BFS is better over DFS and if we want to find 10 than DFS is better over BFS.