

Subjugation of Man: A Fantasy



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Abstract

21st century witnesses a wide growth in the field of artificial intelligence. Nowadays artificial agents are replacing humans in many sectors specially manufacturing sector, defence sector, medical field etc. They are preferred over humans because of the accuracy and preciousness of their work.

The movement which came to be known as Existentialism is primarily concerned with freedom and decision. It cannot be explained in terms of motives or subsumed under a rational ethical principle. Phenomenology deals with the description of 'pure' phenomena and putting 'in brackets' all that is assumed about the objects of perception. The difference between one kind of psychological phenomena and another is to be drawn by the different quality of relation of each of its object. What is significant is the reference to an object for there can be no hearing without something heard, no hoping without something hoped. Another distinction is also made between the plurality of perceptual experiences and the unity of the meaning. In an act of perception, one thing perceived may be related to many things as they are perceived (perceptual neomata). This article attempts to compare the cognitive capabilities of artificial agents with humans as envisaged by a philosopher.

Keywords: Cognitive System, Cognitive Science, ACT-R, Existentialism, Phenomenology, 'Pure Phenomena', Perceptual Neomata, Essences, Hierarchy Of Meaningfulness.

Introduction

Humans possess most advanced cognitive system in comparison to other species. The cognitive system of humans has the ability to perform lower cognitive functions like perception, associative memory recall as well as higher cognitive functions like thinking, reasoning, linguistic competencies etc. The cerebrum which is the largest part of the human brain consists of four lobes. Frontal lobe is associated with reasoning, planning, problem solving, parts of speech, movement etc. Temporal lobe is associated with perception and recognition of auditory stimuli, memory and speech. Occipital lobe is concerned with visual processing. Parietal lobe has to do with movement, recognition, perception of stimuli etc.

With the growth and advancement of modern science and technology, we have ushered into a new era. Science has made tremendous achievements so much so that the scientists have been able to make a robot. The main aim of cognitive science is to create and understand the artificial agents that support the same capabilities as humans. Cognitive science analyzes the response of human brain for a particular problem and then develops the cognitive architecture based on it. For this purpose scientists study the activities of several brain areas and record the diverse response from the brains of different individuals.

Aim of the Study

To compare the cognitive capabilities of artificial agents with humans as envisaged by a philosopher.

Following are some of the issues that have been taken into account while designing the cognitive systems.

Classification

It is the ability to assign objects or situations to known categories

Perception

It is the result of sensing the environment and then arriving at a single conclusion. For an artificial agent the major challenge is to perceive the dynamic environment.

Decision Making

It involves two steps. First to test the validity of the given choices and next to select the best choice.

Problem Solving

It involves searching the problem space, selecting the promising alternative and continuing till the goal is achieved.

Planning

It requires that the artificial agent must be able to perceive the effects of its actions and make a plan accordingly.

Reasoning

In this process, from the available information a conclusion is drawn. An agent is said to be rational if its actions are based on logic and reasoning.

Action

In a cognitive architecture, the agents can perform the actions in two ways.

The open loop execution involves the calling of a stored procedure without taken into consideration the environment. The closed loop execution involves the sensing of environment and in the light of it selecting the actions.

Communication

In a cognitive architecture, the agent must be able to process the natural language as well as support the interaction with other agents.

Learning

An agent is made to learn through observing another agent, analyzing its own problem solving behavior and interacting with humans.

ACT-R (Adaptive Components of Thought Rational) is a hybrid cognitive architecture aimed at developing a system that is able to perform the wide range of human cognitive activities. ACT-R was developed at Carnegie Mellon University under the supervision of John R. Anderson. ACT-R assumes that the human knowledge can be represented in two forms.

1. Declarative
2. Procedural

Based on this assumption, the memory modules in the ACT-R architecture are divided into two categories. First is declarative memory that comprises of factual information and the second is procedural memory that stores the method or procedure of doing a particular task. Procedural memory is made up of productions. Every production has a utility value for keeping record of its past success. Besides memory modules there are perceptual motor modules present in the architecture. These modules act as an interface between the system and the real world. The buffers in the ACT-R architecture provides a temporary storage for the inter module communication except for procedural memory module. Another component of ACT-R is the pattern matcher which searches that production in the procedural memory that matches with the current state of buffers. After the execution of the production, the contents of the buffer may change accordingly which therefore changes the state of the system.

ACT-R architecture can be used to design models that support different phenomena like problem solving, learning, memory, decision making, communication etc.

Following are some of the shortcomings of the ACT-R architecture.

1. In the ACT-R architecture, at a time only one rule is fired by the central production system. This restricts the number of cognitive steps that can be performed.
2. ACT-R cannot match arbitrary patterns in declarative memory. It can only match items in its buffers.
3. ACT-R models are made to learn through interpreting instructions stored in memory. This shows the performance of the model because retrieving an instruction from memory is a time consuming process.

If we talk about **Existentialism**, we find that such themes as freedom, decision and responsibility are conspicuous in all the Existentialist philosophers. It is the use of freedom and the ability to shape the future that distinguishes man from all other beings. It is through free and responsible decisions that man becomes authentically himself.

One's free decision and choice cannot be reduced to psychological explanation in terms of motives, nor subsumed under a rational ethical principle.

The drives of the body, the contingent facts of nature, the obligations of duty, the limitations of one's situation, are constituents of one's decision but they remain only conditions and resistances.

The German Existentialist philosopher Karl Jaspers adds that the decision of the free agent is not bound by these rudiments of behavior. Even if the decision is predicted by way of motives, or contrived on rational grounds, the decision stems from his impulsive nature. It is a choice which is made on the spur of the moment and is thus most free and spontaneous. It is precisely this choice and decision which hold on responsible for his actions. It is also significant to know that the choice may not be right and reasonable. One can will an action which is irrational. What matters is that one has made a decision.

In the case of artificial intelligence, the choices A, B, C or D for that matter multiple choices entail after weighing all the pros and cons. But one has really missed the point, the human agent brushes aside all these choices and makes a decision on his own impulse and whims. It is always the prerogative of humans to choose.

This concept of freedom occupies a key position in the philosophy of theist Existentialist thinker Soren Kierkegaard. He gives the classical example of Abraham's sacrifice of his son Isaac. When Abraham heard the call of God demanding his son's life, he faced the most difficult dilemma. It was through his subjective experience that he realized that it is God who is bidding him to make this sacrifice. Abraham obeyed God's command. His decision to do so was in a sense irrational, it went contrary to parental feeling, it was against all ethical norms. Abraham however obeyed God's imperative and by his decision spurned all ethics, love and reason.

If we talk about Phenomenology, we find that Phenomenology began with the work of Franz

Brentano. In 1874 he published his book 'Psychology from an Empirical Point of view'. In this book he drew a programme of descriptive psychology. Brentano made explicit the primal difference between the objects of empirical psychology and the objects of other empirical sciences. For instance there is a difference between the earth's crust studied by geologists or the birds studied by ornithologists and the phenomena with which psychologists are concerned- thoughts, emotions, decisions etc.

Psychologists are concerned with ideas and by idea is meant, not that which is conceived but the act of conceiving. We may take into account the hearing of a tone or the seeing of a coloured object. But what is significant here is the reference to an object for there can be no hearing without something heard, no hoping without something hoped and so on.

The difference between one kind of psychological phenomena and another is to be drawn by the different quality of relation of each to its object. These different qualities can be reached by immediate experience or inner perception. Descriptive psychology proceeds by inner perception, by which one can know the difference between hoping something and fearing something by the act itself. There is a matter of fact a difference between hoping something and being afraid of something and we experience a break.

Phenomenology is concerned with the description of 'pure' phenomena, with 'experiences' regardless of the fact that these experiences refer to concrete existing objects or to fictions. Husserl affirms that phenomenology set aside or put 'in brackets' all that is known or normally assumed about the objects of perception or thought in order to describe and then analyze them as pure phenomena. In the phenomenological method with its first step reduction, its aim is to eliminate pre suppositions and to turn experience into 'pure phenomena'.

Another distinction is also to be drawn between the plurality of perceptual experiences and the unity of the meaning. Husserl proceeds from the consideration of our understanding of verbal expression to our perceptual experience of the world. He argues that just as a multiplicity of meanings may be related to the same object meant by a word, so in an act of perception, one thing perceived may be related to many things as they are perceived (perceptual neomata).

It may also be pointed out that it is the function of intention to relate different perceptual experiences to one object. This object is identified in the intentional act of perception i.e. if one looks at an object from different angles over a period of time, it is

the intentionality of perception which entitles one to say 'I have been looking at the same object all this time'.

Husserl ascertained that it is immediate experience in which universals or essences are grasped. He was not denying that one grasps the idea of whiteness from the observation of particular white objects. He was merely emphasizing the fact that in observing a white object one is seeing the essence that is whiteness. It was this conviction that there is a universal element in experience which made him repudiate the descriptive psychology of Brentano.

Husserl arrived at the truth that the 'given' could not be identified with the 'immanent'. There were objects which were given immediately in experience and were significant because they referred to something beyond themselves. There is so to say a kind of hierarchy of meaningfulness. Individual experiences would be meaningless if they were not thought of as 'meaning' the object to which they are all to be referred. And objects perceived individually would be unintelligible if they did not reveal their meaning that is the general essence which can be grasped in them.

When one does the phenomenological reduction that is 'put in brackets' our beliefs about the existence of things, and the assumptions about existence, then we can concentrate on the concrete phenomenon and then we will be able to grasp its existence.

Conclusion

It is not easy to replicate the complex man created by God. Common responses to a stimulus can be fed in an artificial agent but since the cognitive system of humans is so advanced it is difficult to perceive unique and varied responses to a given stimulus. Artificial intelligence has touched many milestones in creating 'smart' artificial agents but there is a long road ahead to make them 'intelligent'.

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