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Glossary-1

- **Agent:** An agent is something which perceives from their environment, acts autonomously in its environment to do some changes in the environment.
- **Autonomy:** Autonomy means acting independently without any external help. An autonomous agent acts on its own without any help from other agents.
- **Chinese Room Experiment:** This experiment states that a computer can converse in chinese to a live chinese speaker efficiently but it doesn't actually have any consciousness or doesn't understand the conversation. It simply performs the commands of the program, so can any english speaker with those program commands, which concludes that the assumption of strong AI is false.
- **Cognitive Science:** It is an interdisciplinary field of AI, which brings computer models and techniques from psychology to produce some theories of human mind.
- **Connectionism:** It is an approach related to neural networks where several simpler units are interconnected together as a network to produce a sophisticated mental model.
- **Data Mining:** It is the process of obtaining useful knowledge from a large quantity of data by certain techniques, like statistics, inference models etc.
- **Deduction:** Deduction means obtaining a conclusion from certain statements or predicates by the process of reasoning.
- **Induction:** Induction is a form of reasoning where axioms are constructed based on observations of consequences of previous values. If a statement holds for k values then it will also hold for k+1th value. Eg: Mathematical Induction.
- **Intractability:** A problem which can be solved in theory but not practically in feasible time is called an intractable problem. All NP-Complete problems are Intractable.
- **Knowledge Representation:** Any agent after perceiving input must store it in an organized format that a computer can utilize to solve complex tasks called as Knowledge Representation.
- **Limited Rationality:** It means acting appropriately when there isn't enough time to perform all computations. It approaches a best possible optimal solution in a situation.
- **Natural Language Processing:** Processing of a human language and interpreting/understanding it so as to respond in a human language which is easily understood by the user.

- **NP-Completeness:** A problem is said to be NP-Complete if it cannot be solved in polynomial time, rather a solution to a problem can be verified in polynomial time.
- **Occam's Razor:** It is a principle from philosophy and states that the more assumptions you make, the more unlikely the explanation is. If we have many alternatives, we find it hard to obtain a single solution.
- **Rationality:** The ability to do the right thing at a particular scenario. Obtaining the best possible outcome under uncertainty or constraints is called as restricted rationality.
- **Syllogism:** Given a set of premises, we obtain a form of reasoning in which a conclusion is drawn, which is called as Syllogism.
- **Total Turing Test:** If a human interrogator after posing some questions, cannot tell whether the responses come from a person or computer, then the computer is said to have passed Turing test. Total Turing test also includes physical interaction with the system to perceive and make some changes in the environment. It must have the following capabilities.

  Natural Language Processing.

  Knowledge Representation.

  Automated Reasoning.

  Machine Learning

  Computer Vision.

  Robotics.

- **Turing Machine:** It is a machine which is capable of computing any computable function. It has a finite ID cell tape, one cell has a read/write tape and the machine can be in any one of the states, the tape head moves to left or right along the input tape and performs reads/writes on the tape according to the symbol it encounters.
- **Turing Test:** An AI system is said to pass Turing test, if a human interrogator after posing some questions cannot tell whether the responses come from a person or a computer.

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