Turing Test in AI(Artificial Intelligence)

Md. Alamgir Hossain

Senior Lecturer

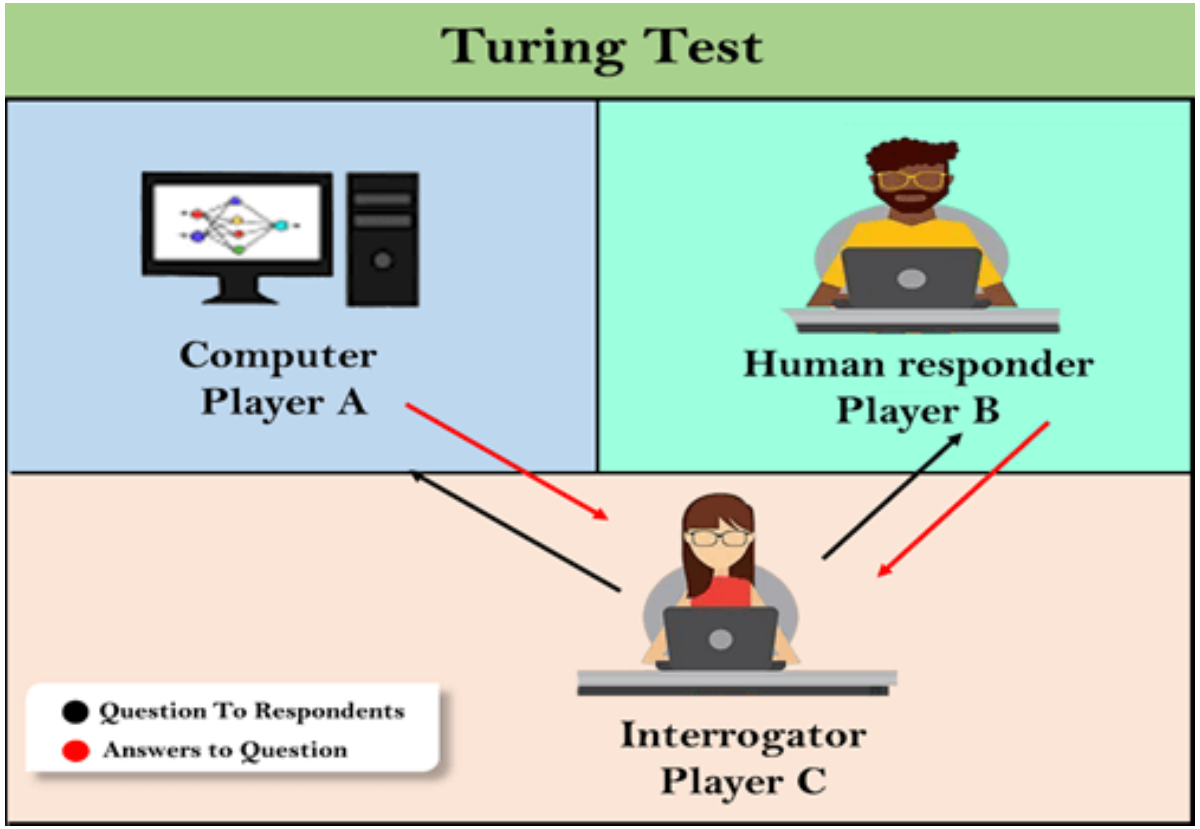
Dept. of CSE, Prime University

Mail: *alamgir.cse14.just@gmail.com*

Basic of Turing Test

- The **Turing test** developed by Alan Turing(Computer scientist) in 1950.
- He proposed that ***"Turing test is used to determine whether or not computer(machine) can think intelligently like human"?***

Turing Test with an Example



Turing Test with an Example

- The Turing test is based on a party game "Imitation game," with some modifications.
- This game involves three players in which one player is ***Computer***, another player is ***human responder***.
- And the third player is a ***human Interrogator***, who is isolated from other two players and his job is to find that which player is machine among two of them.

Turing Test with an Example

- Consider, Player ***A is a computer***, Player ***B is human***, and Player ***C is an interrogator***. Interrogator is aware that one of them is machine, but he needs to identify this on the basis of questions and their responses.
- The conversation between all players is via keyboard and screen so the result would not depend on the machine's ability to convert words as speech.
- The test result does not depend on each correct answer, but only how closely its responses like a human answer. The computer is permitted to do everything possible to force a wrong identification by the interrogator.

Turing Test with an Example(Question & Answering)

The questions and answers can be like:

- **Interrogator:** Are you a computer?
- **Player A (Computer):** No
- **Interrogator:** Multiply two large numbers such as (256896489*456725896)
- **Player A:** Long pause and give the wrong answer.

Final Decision Making in Turing Test

- In this game, ***if an interrogator would not be able to identify which is a machine and which is human***, then the computer passes the test successfully, and the machine is said to be intelligent and can think like a human.
- "In 1991, the New York businessman Hugh Loebner announces the prize competition, offering a $100,000 prize for the first computer to pass the Turing test. However, no AI program to till date, come close to passing an undiluted Turing test".

Chatbots to attempt the Turing Test

- **ELIZA:** ELIZA was a Natural language processing computer program created by Joseph Weizenbaum. It was created to demonstrate the ability of communication between machine and humans. It was one of the first chatterbots, which has attempted the Turing Test.
- **Parry:** Parry was a chatterbot created by Kenneth Colby in 1972. Parry was designed to simulate a person with **Paranoid schizophrenia**(most common chronic mental disorder). Parry was described as "ELIZA with attitude." Parry was tested using a variation of the Turing Test in the early 1970s.
- **Eugene Goostman:** Eugene Goostman was a chatbot developed in Saint Petersburg in 2001. This bot has competed in the various number of Turing Test. In June 2012, at an event, Goostman won the competition promoted as largest-ever Turing test content, in which it has convinced 29% of judges that it was a human. Goostman resembled as a 13-year old virtual boy.

The Chiness Room Argument

- There were many philosophers who really disagreed with the complete concept of Artificial Intelligence. The most famous argument in this list was "**Chinese Room**."
- In the year **1980, John Searle** presented "**Chinese Room**" thought experiment, in his paper "**Mind, Brains, and Program**," which was against the validity of Turing's Test. According to his argument, "**Programming a computer may make it to understand a language, but it will not produce a real understanding of language or consciousness in a computer**."
- He argued that Machine such as ***ELIZA*** and ***Parry*** could easily pass the Turing test by manipulating keywords and symbol, but they had no real understanding of language. So it cannot be described as "thinking" capability of a machine such as a human.

Features Required for a Machine to Pass the Turing Test

- **Natural language processing:** NLP is required to communicate with Interrogator in general human language like English.
- **Knowledge representation:** To store and retrieve information during the test.
- **Automated reasoning:** To use the previously stored information for answering the questions.
- **Machine learning:** To adapt new changes and can detect generalized patterns.
- **Vision (For total Turing test):** To recognize the interrogator actions and other objects during a test.
- **Motor Control (For total Turing test):** To act upon objects if requested.

Thank You