STORIA DELLE CONOSCENZE SCIENTIFICHE SULL'UOMO E SULLA NATURA
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Prof. Roberto Giuntini, PhD.

Introduzione alla storia dell'intelligenza artificiale e della robotica

Modulo I

INTRODUZIONE

I propose to consider the question, "Can machines think?" This should begin with definitions of the meaning of the terms "machine" and "think." The definitions might be framed so as to reflect so far as possible the normal use of the words, but this attitude is dangerous, if the meaning of the words "machine" and "think" are to be found by examining how they are commonly used it is difficult to escape the conclusion that the meaning and the answer to the question,

"Can machines think?" is to be sought in a statistical survey such as a Gallup poll. But this is absurd. Instead of attempting such a definition **I shall replace the question by another, which is closely related to it and is expressed in relatively unambiguous words***.*
The new form of the problem can be described in terms of a game which we call the "imitation game."

THE IMITATION GAME

It is played with three people, a man *(A), a* woman *(B), and an* interrogator *(C) who may be of either sex. The interrogator stays in a room apart front the other two. The object of the game for the interrogator is to determine which of the other two is the man and which is the woman.*

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THE IMITATION GAME

He knows them by labels X and Y, and at the end of the game he says either "X is A and Y is B" or "X is B and Y is A." The interrogator is allowed to put questions to A and B thus:

C: Will X please tell me the length of his or her hair?

Now suppose X is actually A, then A must answer. It is A's object in the game to try and cause C to make the wrong identification.

The imitation game

His answer might therefore be:
"My hair is shingled, and the longest
strands are about nine inches long."
In order that tones of voice may not help
the interrogator the answers should be
written, or better still, typewritten. The
ideal arrangement is to have a teleprinter
communicating between the two rooms.
Alternatively the question and answers can
be repeated by an intermediary. The
object of the game for the third player (B)
is to help the interrogator.

THE IMITATION GAME

The best strategy for her is probably to give truthful answers. She can add such things as "I am the woman, don't listen to him!" to her answers, but it will avail nothing as the man can make similar remarks.

We now ask the question, "What will happen when a machine takes the part of A in this game?" **Will the interrogator decide wrongly as often when the game is played like this as he does when the game is played between a man and a woman?** *These questions* replace our original, 'Can machines think?"
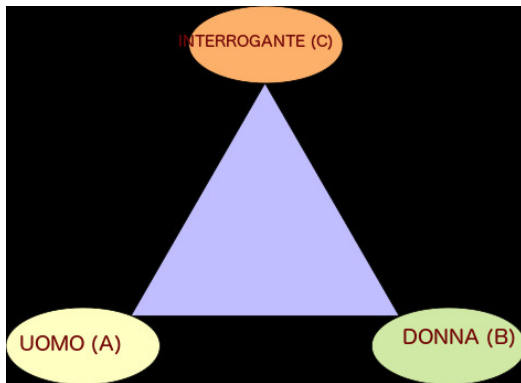
Alan Mathison Turing (1912-1954)

A. M. Turing, "Computing machinery and intelligence", *Mind*, 59, pp. 433-460
(*trad. it.* "Macchine calcolatrici e intelligenza", in V. Somenzi (a cura di), *La filosofia degli automi*, Bollati Boringhieri, Torino 1965).
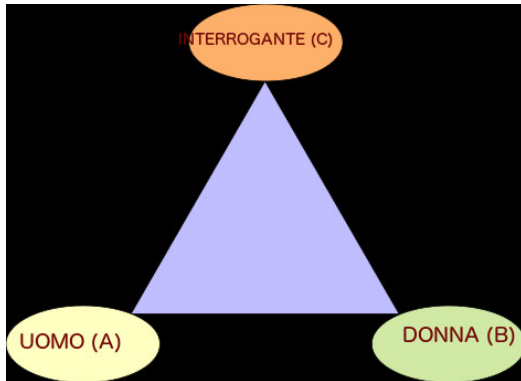
The imitation game

1. A cerca di ingannare C
2. B dice la verità

The imitation game

1. A cerca di ingannare C
2. B dice la verità

La domanda

"POSSONO LE MACCHINE PENSARE?"

viene sostituita con la domanda

"CHE COSA ACCADRÀ SE UNA MACCHINA PRENDE IL POSTO DI A NEL GIOCO?"
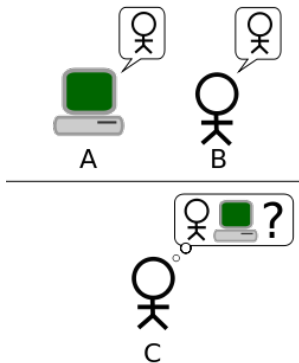
THE IMITATION GAME

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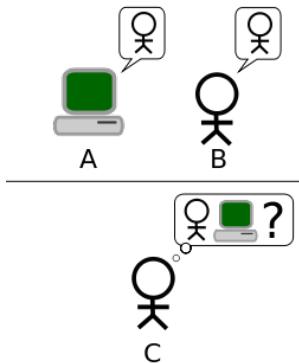"CHE COSA ACCADRÀ SE UNA MACCHINA
PRENDE IL POSTO DI A NEL GIOCO?"

Il Test di Turing

Test di Turing (Wikipedia)

Il Test di Turing

Test di Turing (Wikipedia)

Il Test di Turing

Una "macchina passa il test di Turing se e soltanto se l'interrogante non è grado di stabilire chi sia A e chi sia B.

Il Test di Turing

SE una MACCHINA PASSA IL TEST DI TURING, ALLORA pensante

PASSARE IL TEST DI TURING è CONDIZIONE SUFFICIENTE, MA NON NECESSARIA PER ESSERE PENSANTI

IL TEST DI TURING

SE una MACCHINA PASSA IL TEST DI TURING, ALLORA pensante

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LA CONGETTURA DI TURING

"Entro 50 anni sarà possibile programmare calcolatori con una capacità di memorizzazione di circa 10^9, per fare il gioco dellimitazione così bene che un esaminatore medio non avrà più del 70% di probabilità di compiere l'identificazione esatta dopo 5 minuti di interrogazione."

LOEBNER PRIZE

Loebner Prize

La stanza cinese (italiano)

The Chinese room (English)