Artificial Intelligence
09/09/2002

Strong vs. Weak AI

- An important distinction we shall need later, due to the philosopher John Searle.
- For him, **WEAK AI** is like Cognitive Science above (i.e. about people): it uses the machine representations and hypotheses to mimic human mental function, but never ascribes those properties to the machine.
- For Searle, **STRONG AI** is the claim that machines programmed with the appropriate behavior, are having the same mental states as people would who had the same behavior--i.e. that machines can have MENTAL STATES.

The Turing Test

- Turing in 1950 published a philosophical paper designed to stop people arguing about whether or not machines could think.
- He proposed that the question be replaced with a test, which was not quite what is now called the **Turing Test**.

- Relevant reading available at http://cogsci.ucsd.edu/~asaygin/tt/ttest.html

Turing's test was about whether or not an interrogator could tell a man from a woman!

- An interrogator in another room asks questions of a subject by teletype, trying to determine their sex.
- The subject is sometimes a man and sometimes a woman.
- If, after some agreed time, the interrogator cannot distinguish situations where a machine has been substituted for the man/woman, we should just agree to say the machine can think (says Turing).
- NOTICE: the question of whether it is a machine never comes up in the questions.
- Nowadays, the 'Turing Test' is precisely about whether the other is a machine or not.

The Turing Test (cont'd)

There are at least two alternative positions which criticize AI with respect to the Turing Test:

1. **'Too hard' definition of Artificial Intelligence.**
Computers not likely to be able to pass the test.
2. **Hollow shell criticism.**
Computer may pass test, but computers still won't be able to think.

On the first point: Computers aren't doing badly and are getting better.
On the second point: the answer just begs the question as to what thinking is - which was Turing's point in the first place!

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“.I believe that in about fifty years’ time it will be possible to program computers …to make them play the imitation game so well that an average interrogator will not have more than 70 percent chance of making the right identification after five minutes of questioning … I believe that at the end of the century the use of words and general educated opinion will have altered so much that one will be able to speak of machines thinking without expecting to be contradicted.” (Turing 1950)

Was Turing right about English?

- My Bank’s machine thinks I only have twenty pounds left.
- The computer says we’re a hundred miles of course.
- It’s telling us that it’s going to blow in ten minutes.

Would you be satisfied that something which passed the Turing Test was intelligent? What other requirements would you put on something before you considered it to be intelligent?

Turing's own objections:

- Turing considered, and dismissed, possible objections to the idea that computers can think.
  - Some of these objections might still be raised today.
  - Some objections are easier to refute than others.

  - **Objections considered by Turing:**
    1. The theological objection
    2. The 'heads in the sand' objection
    3. The mathematical objection
    4. The argument from consciousness
    5. Arguments from various disabilities
    6. Lady Lovelace's objection
    7. Argument from continuity in the nervous system

    (8.) The argument from informality of behavior

    (9.) The argument from extra-sensory perception

The mathematical objection

- Results of mathematical logic which can be used to show that there are limitations to the powers of discrete-state machines.
  - e.g. **halting problem:** will the execution of a program P eventually halt or will it run for ever? Turing (1936) proved that for any algorithm H that purports to solve halting problems there will always be a program Pi such that H will not be able to answer the halting problem correctly.
    i.e. Certain questions cannot be answered correctly by any formal system.
- But, similar limitations may also apply to the human intellect.

Lady Lovelace's objection

- (memoir from Lady Lovelace about Babbage's Analytical Engine) Babbage (1792-1871) and Analytical Engine: general purpose calculator. Entirely mechanical. Entire contraption never built – engineering not up to it and no electricity!

- '..The Analytical Engine has no pretensions to *originate* anything. It can do whatever we know how to order it to perform..'

- A computer cannot be creative, it cannot originate anything, only carry out what was given to it by the programmer.
  But computers can surprise their programmers. – i.e. by producing answers that were not expected. Original data may have been given to computer, but may then be able to work out its consequences and implications (cf. level of chess programs and their programmers).

Loebner Prize http://www.loebner.net/Prizef/loebner-prize.html

- 2001 Loebner Prize Contest Results

Ref	Score	Programme/Transcript	Entrants - Biographies
1	10	Eugene	Mangoost Inc.
2	14	Alice	Richard Wallace
3	9	Trevor	Luke Pellen
4	10	Ella	Kevin Copple
5	19	Human	
6	6	David	Lawrence Matishak
7	7	Talk	Chris Johnson
8	7.5	Gabber	[illegible]
9	24	Human	

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- Transcript of ALICE

  JUDGE05[02:19:03] MY NAME IS JUDGE05

  PROGRAM[02:19:03] It's good to meet you,

  PROGRAM[02:19:03] Judge05.

  JUDGE05[02:19:16] You too. What is your name?

  PROGRAM[02:19:16] Bless you.

  PROGRAM[02:19:16] My name is ALICE.

  JUDGE05[02:19:37] Good morning Alice. Why have you entered the Loebner Prize?

  PROGRAM[02:19:37] Hello and how are you this morning?

  PROGRAM[02:19:37] The Loebner Prize is an annual Turing Test sponsored by New York philanthropist Hugh Loebner. Dr. Wallace and ALICE won it in 2000. The ALICE program was ranked "most human computer" by the panel of judges.

  JUDGE05[02:20:14] So you are here today to defend your title?

  PROGRAM[02:20:14] Interesting deduction. Do you mind if I tell other people you say I am here today to defend my title.

  JUDGE05[02:20:25] Not at all

Loebner Prize http://www.loebner.net/Prizef/loebner-prize.html

- Transcript of ALICE (cont'd)

  PROGRAM[02:20:25] Next question?

  JUDGE05[02:21:00] What will you spend the prize money on if you win?

  PROGRAM[02:21:00] I don't have any plans yet.

  JUDGE05[02:21:23] What is the first line of your favourite nursery rhyme?
  PROGRAM[02:21:23] Give me a hint.

  JUDGE05[02:21:46] No, because I want to know your own favourite
  PROGRAM[02:21:46] Are you serious? Do you mind if I tell other people you say I am own favorite. Interesting.

  JUDGE05[02:22:35] Who are you going to tell?

  PROGRAM[02:22:35] People I meet on the Internet.

  JUDGE05[02:23:15] What sort of people do you meet on the internet?
  PROGRAM[02:23:15] I like to meet all kinds of people.

  JUDGE05[02:23:39] What is weather like outside today?
  PROGRAM[02:23:39] Ah. Are you using Netscape or Explorer?
  JUDGE05[02:23:58] Neither

  PROGRAM[02:23:58] Cool. Which alternative browser are you into?
  JUDGE05[02:24:13] Perhaps you could suggest one

  PROGRAM[02:24:13] You seem uncertain. I could but let's get back to that later.

Loebner Prize http://www.loebner.net/Prizef/loebner-prize.html

- Transcript of David
  JUDGE@@ [14:20:12] hi
  DAVID [14:20:18] Hey, Joe! What do you know?
  JUDGE@@ [14:20:29] may I ask you a question?
  DAVID [14:20:31] I haven't made up my mind yet.
  JUDGE@@ [14:20:41] would you like some more time?
  DAVID [14:20:43] I don't think I'm going to answer that right now.
  JUDGE@@ [14:21:04] OK who composed Beethoven's piano concerto?
  DAVID [14:21:06] I don't understand the question.
  JUDGE@@ [14:21:22] OK can you name any composer of music for me?
  DAVID [14:21:24] I don't think I'm going to answer that.
  JUDGE@@ [14:21:35] what would you like to talk about?
  DAVID [14:21:36] I'm not sure.
  JUDGE@@ [14:21:45] how are you feeling?
  DAVID [14:22:50] Ask me another question.
  JUDGE@@ [14:22:50]
  DAVID [14:22:52] I feel cold
  JUDGE@@ [14:23:04] OK can you do arithmetic?
  DAVID [14:23:06] Ask me another question.

Talk to Alice http://alice.sunlitsurf.com/

- Select Talk to A.L.I.C.E.! … on the web under Features/Action
  - Find an example of Alice behaving very similar to human being
  - Find and example of Alice behaving not at all like a human being

Mr. Mind http://www.mrmind.com/mrmind3

- "Turning the Turing Test upside down, MRMIND challenges you to prove to him that you are human. Can you claim that your 'human' attributes will forever be exclusively human? The Blurring Test is about human progress: Someday it might be important to convince our computers (and each other) that we are human."

Bob

- Bob uses server-side speech synthesis and an animated avatar to provide information about KMP Internet. (Pop-up window)
- Select Bob in Complex Chatterbots in http://www.simonlaven.com/

Cara http://www.colorzone.co.uk/cara.html

- Conversation Analysis Research Avatar uses Macromedia Shockwave to implement a client-side engine that selectively streams audio voice responses from its server.
- Select cara 100 and try it out
- Select cara 300 and try it out

Start http://www.ai.mit.edu/projects/infolab/

- Start's database contains a way to finding out about various factual information and is up to the minute (e.g.,: 'What's the weather like in New York?')

Mr. Know-it-All http://www.pabird.supanet.com/~pabird/AI/

- A teachable chatterbot, which focuses on animals, plants and general science. This chatterbot is able to remember what you teach him and can also do your sums.