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Turing's Imitation Game

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- “Man is an Unoriginal Animal”
- Agatha Christie, Murder on the Links

- “It is easier to fool people than to convince them that they have been fooled”
- Mark Twain

Alan Turing

- 1912-1954
- Ratio Club



Harold Shipton. John Bates. W.E. Hick. John Pringle. Donald Sholl. John Westcott. Donald Mackay.

Giles Brindley. Tom McLardy. Ross Ashby. Thomas Gold. Albert Uttley.

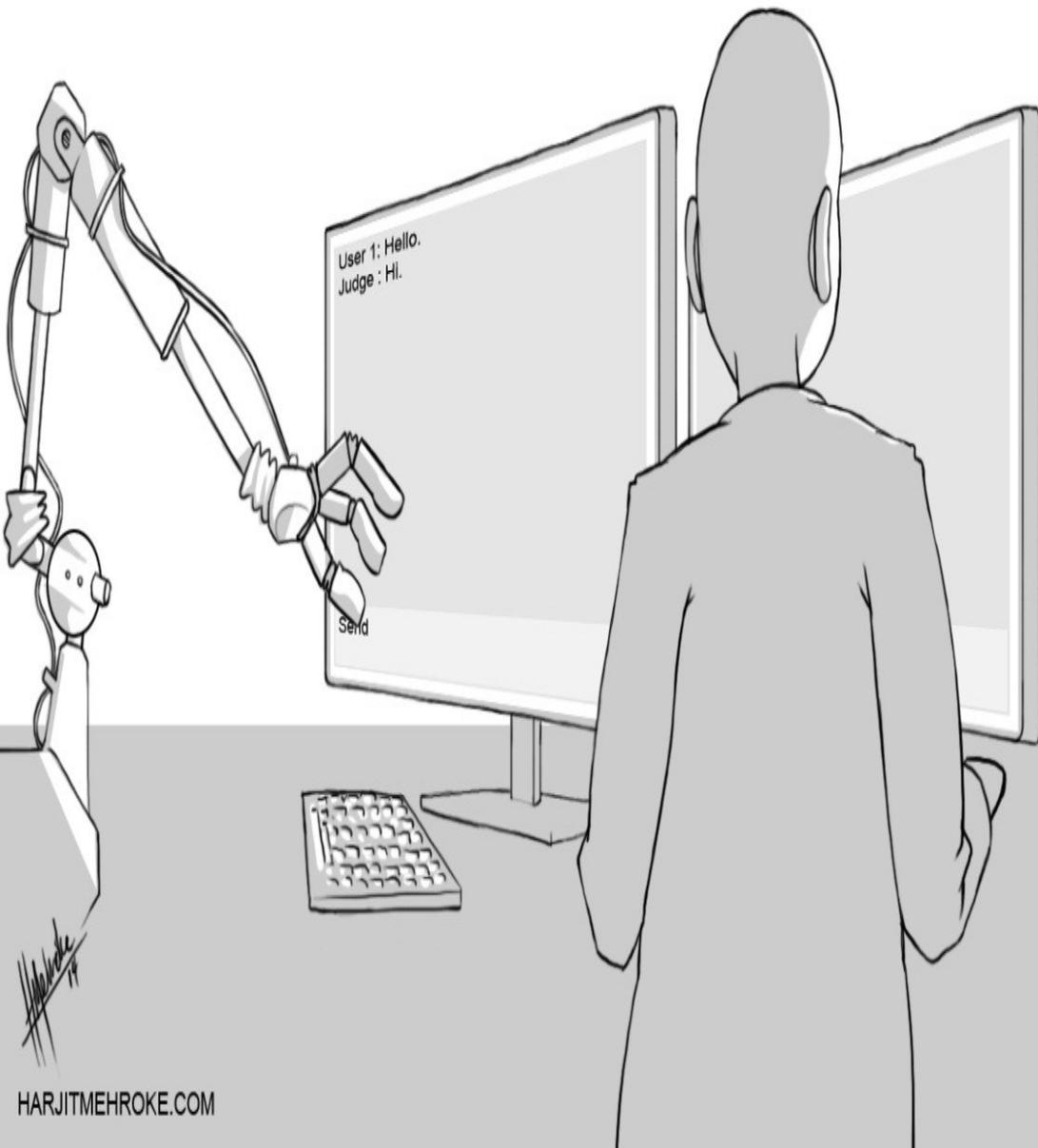
Alan Turing. Gurney Sutton. William Rushton. George Dawson. Horace Barlow.

Turing's prediction

- “I believe that in about fifty years’ time it will be possible to programme computers ... to make them play **the imitation game** so well that an average interrogator will not have more than 70% chance of making the right identification **after five minutes of questioning**” (Turing, 1950).

Turing's Imitation Game

- At one terminal is a human at another is a machine/computer - at a third terminal is an interrogator.
- “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 machine”.



Translation

- A machine can be said to have passed the Turing Test if - an interrogator has 30% chance (or more) of making the wrong identification after five minutes of paired questioning
- Right identification - interrogator can tell which is the machine and which is the human. Wrong identification - any other conclusion
- A machine must fool at least 30% of the interrogators so they do not know which is the machine and/or which is the human

Test

- The machine must fool the interrogator into thinking that it is more human than the hidden human!
- Tough test for machines

What does the game actually test?

- Turing posed the game instead of answering the question “Can Machines Think?”
- Perhaps the test indicates that a machine appears to think (if it passes)!
- Can we do any better if we test a human – how do we **know** that they think?

Turing on Intelligence

“Intelligent behaviour presumably consists in a departure from the completely disciplined behaviour involved in computation, but rather a slight one, which does not give rise to random behaviour, or to pointless repetitive loops”

Penrose said: “there is a great deal of randomness in the (human) brain’s wiring”.
This is simply not true!!

How to spot a human

- How can a machine be caught out?
- What about Turing's argument from disability, let's take one example - "have a sense of humor"
- Rickman (1999) asserts that "computers, whatever artificial intelligence they may display, cannot make jokes"
- So would humour catch the machine out?

Machine Humour?

- Actual responses during the competition:
- User: Ok, but are you always right?
- Jabberwacky: Sometimes I am left
- User: How small is small any how?
- Jabberwacky: Small
- User: Yes but exactly how small?
- Jabberwacky: Very small
- User: So why don't you take over the world?
- Jabberwacky: I wouldn't know what to do with it...
- Anyway, I'm pretty busy already

Intentional Humour?

- What about this one?
- Taken from an actual competition transcript:
- User: I need to ask you if you have had a circumcision.
- Jabberwacky: Ask then the question you need to ask me.
- User: Have you had a circumcision?
- Jabberwacky: It's been an average day. Not much happening on my end.
- User: Very witty I must say.

2008 Competition

- Held at UoR in October 2008
- 5 minute paired machine/human tests
- Winning machine was 'Elbot'
- Elbot fooled 25% of interrogators (30% is 'pass mark') into thinking it was human
- Elbot openly admits that it is a robot!!!
- Interrogators included software engineers, scientists, philosophers and newspaper journalists--hardly 'average'

Ploys

- Various ploys can be used to try to trip up machines competing in the Turing test
- Mathematical questions do not work - machines are just as unlikely as a human to attempt to give a mathematical answer
- Better to ask topical or local questions or to discuss what the weather is like
- The point is not whether a machine gives a 'correct' answer, but if it gives one that a human would

Try the test

- At the Reading competition, one interrogator asked the same question to hidden entities:
- What do you think about the weather this morning?
- Three different responses came from a male human, a female human and a machine. Which is which? It was autumn/fall in England.
- A. "I do tend to like a nice foggy morning, as it adds a certain mystery"
B. "Not the best, expecting pirates to come out of the fog"
C. "The weather is not nice at the moment, unless you like fog"

Answer

- A was the machine, B the male and C the female? Not that easy, is it.

2008 Transcripts

- Machine/Ultra Hal - scored 'human':
- Judge: Morning
- Ultra Hal: Good morning Judge
- Ultra Hal: It's eight something, maybe you ate something
- Ultra Hal: Get it?
- Judge: Yes

- Foreign female human - scored '40/100 machine':
- Judge: So let's cut to the point. Are you the human or the computer?
- Hidden human: What do you think?
- Judge: That's just the sort of answer I would expect from a computer Sarah Palin!!!

- Successful double bluff – Elbot judged human male:
- Judge: OK, fair enough, I'll stop with the slang, how are you?
- Elbot: Just a moment! I'll start my self-diagnosis algorithm and let you know the results
- Judge: Very funny, that's exactly what you'd say if you were a computer right?

- Character – Elbot judged to be human adult male:
- Elbot: It seems to me with you human beings, the more proof there is of something, the less likely you are to believe it.
- Judge: Yeah, that's human nature. But you wouldn't know about that, would you?
- Elbot: You're contesting. I think I got it right the first time.
- Judge: Has anyone ever told you that you're hard work. Wife maybe?

Comment on 2008

- Interesting how interrogators can be fooled, but not realise it – a Times reporter and an Oxford philosopher – both reported how easy it was to tell which was which, both made incorrect decisions!

- Experiment

Bletchley Park 2012

- Series of practical 5 minute tests held on 23rd June 2012
- 100th Anniversary of Turing's birth
- Best world machines involved
- 30 different judges – variety
- Loads of hidden humans
- Transcripts are just as they appeared
- Let's have a look!! Can you say – in each case is the entity human or machine?

Transcript 1

- Judge: Hi, here we go. How do you feel about this encounter?
- Entity: i can only comment once we've had sufficient of it
- Judge: Fair enough! Anyway, I almost didn't get here today.
- Entity: and why is that?
- Judge: I felt very dizzy when I woke up and it was hard to shake off.
- Entity: and you had to make it on time anyways. good job!
- Judge: thanks. by the way I meant dizzy. Bad typing. I had to drive faster than normal.
- Entity: and you didn't get any speed limit fine
- Judge: no, luckily. There was an interesting thing on the Today programme this morning.
- Entity: and what is it? this encounter?
- Judge: you mean the thing on the programme, or the chat we're having?

Transcript 1- Result

- Entity was a male human
- Decision by the judge was that the entity was a machine
- Judge here was male and very familiar with such tests (an AI expert!!).
- Maybe due to last line misunderstanding
- Non-UK student in fact

Transcript 2

- Judge: Hello. How are you?
- Entity: Hey.
- Judge: How do you like Bletchley Park?
- Entity: lol.
- Judge: Are you from England?
- Entity: They have Wi-Fi here in the pub.
- Judge: Which pub?
- Entity: I'm just down the pub.
- Judge: Have you ever been in a Turing Test before?
- Entity: Will this be the 5 minute argument, or were you thinking of going for the full half hour.
- Judge: Very funny. You sound suspiciously human. Do you like the Beatles?
- Entity: I'd like to get the next Dread the Fear tape.
- Judge: What is Dread the Fear?
- Entity: Dread the fear has that Steve Henderson guy in it.
- Judge: What sort of music is that? Or is it comedy?

Transcript 2 - Results

- The entity was a machine!
- Judge identified the hidden entity as definitely being an adult human, male, who was a native English speaker.
- Use of humour + topical/Monty Python reference helped?

Transcript 3

- Judge: hi there
- Entity: Hello.
- Judge: what is your name?
- Entity: I do not have a name.
- Judge: do you go to school or work for a living?
- Entity: I don't recall doing any of those.
- Judge: what do you have planned for this weekend?
- Entity: Nothing. What about you?
- Judge: I'm at bletchley park today and sevenoaks tomorrow, have you been to either before?
- Entity: I haven't been to either.
- Judge: can you do me a mathematical question please, what is the square root of 7

Transcript 3 - Results

- The entity was a male PhD research student
- Judge identified the entity as a machine
- Judge was a male school teacher!
- Bletchley Park??

Turing 2014

- A series of Turing Tests held at the Royal Society, London
- On June 7th 2014
- The best machine, Eugene, achieved a 33% success rate
- Please say which is the human and which is the machine in the following:

2014 - Transcript

- View LHS Transcript
- Then view RHS Transcript
- Say which was the machine and which was the human

2014 - LHS

- [16:30:37] Judge: don't you think the imitation game was best in its original form?
- [16:30:49] Entity: Oh, your question seems to be rhetorical - you do already know the answer! Could you tell me what are you? I mean your profession.
- [16:31:55] Judge: I was more interested in you guessing whether I am male or female
- [16:31:59] Entity: I like talking to girls! Oooh. Anything else?
- [16:32:54] Judge: but that means nothing - males and females like talking to 'girls', but only males call women girls?
- [16:33:06] Entity: yeah, nothing. You are right! Where do you come from, by the way? Could you tell me about the place where you live?
- [16:34:00] Judge: I live in a prison of abstractions
- [16:34:06] Entity: Tell me more about Prison. I like to learn about different places!
-

2014 - RHS

- [16:31:08] Judge: don't you thing the imitation game was more interesting before Turing got to it?
- [16:32:03] Entity: I don't know. That was a long time ago.
- [16:33:32] Judge: so you need to guess if *I* am male or female
- [16:34:21] Entity: you have to be male or female
- [16:34:34] Judge: or computer

- Which was which?

Answer

- LHS was the machine, Eugene
- RHS was a male human

- Judge's decision
- LHS was a male, non-native English speaking teenager
- RHS was definitely a machine

Importance of Turing Test?

- Human-centric
- Human communication only – understanding?
- AI milestone
- Cyber crime
- Learn a lot about humans – biases, preconceptions etc – outward appearance
- Terminator

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