



WHY NON-BIOLOGICAL INTELLIGENCE ≠ ARTIFICIAL

Tomorrow is a special day

- June 23, 2018: 106th anniversary of the birth of mathematician, WW2 Bletchley Park codebreaker and father of machine/artificial intelligence (**AI**)
Alan Turing born on 23 June in 1912



Intelligence.... What is it?



Please discuss with the person next to /nearest to you
for 5 minutes

Bio & Non-bio intelligences.....

October 2017:
Robot given citizenship
by Saudi Arabia:
“many pointed out that
those same rights aren't
afforded to many
humans in the country” –

June 24, 2018:
date women in the
Kingdom will be
allowed to drive



Image from Jimmy Fallon Tonight's *Showbotics* April
2017

https://www.youtube.com/watch?v=Bg_tJvCA8zw

Bio Intelligence



Bio intelligence?

- Email received June 2nd, 2018 from a 1st year undergrad student:

“Hello Dr. Huma I checked my coursework (portfolio) grade and I would like to know how I only got 40% Kind regards”

NB had to search through Moodle to find student's registered name (not the same as the name in the email - with over 320 students in the cohort Lecturers can't be expected to remember all students)

Job of bio-intelligence is to read!

□ My reply to this student:

- **"Please ensure you read assignment requirements provided in weekly lab activity documents, and reminded in Week10 Lab session. See comments in the document.**

- **"Web forms do not show application of gestalt features: proximity, similarity, contrast, closure, etc.- see page 4 in Week7 Lab document, HTA+Visual Design activity. "**

Introduction and summary of learning for HTA + Visual Design were also missing.

Intelligence: what is it?

- Hugh Loebner (Sponsor of annual Loebner Prize for AI):
 - “I don’t know what intelligence is, but like pornography I like it when I see it”

Another perspective

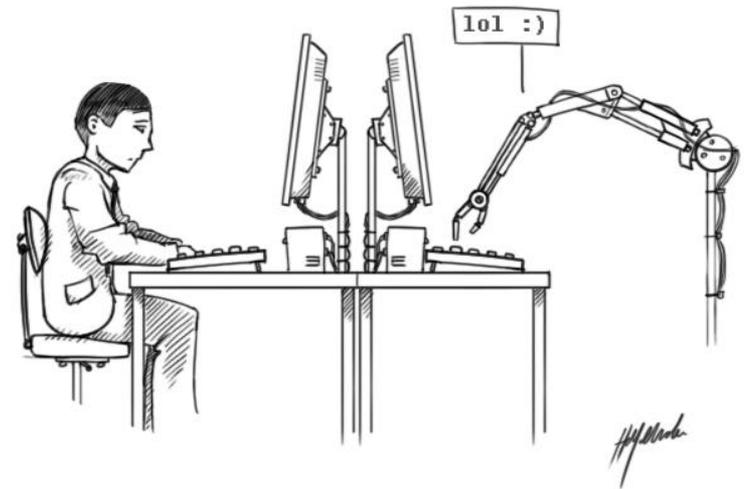
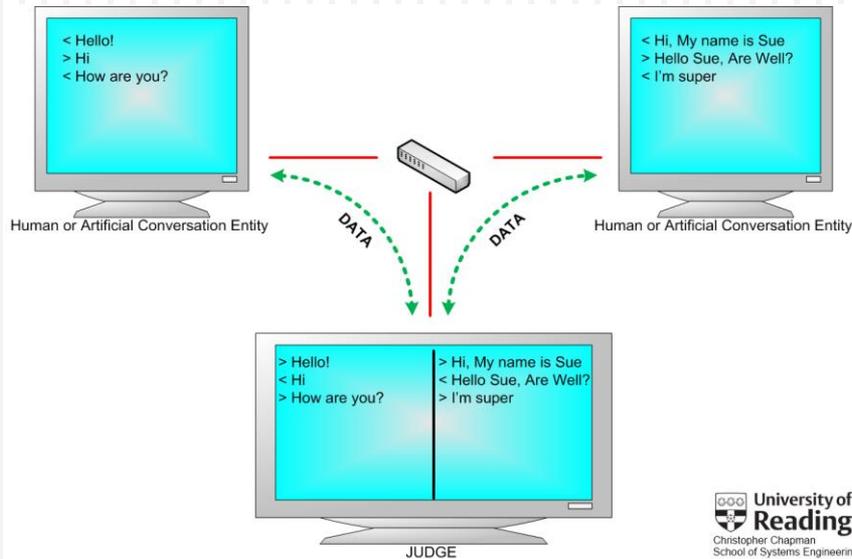


**Appropriately applying skills, knowledge
and experience from learning to tasks
ahead (Huma Shah!)**

Non-bio/AI Intelligence: Background

- Turing (1948): Of the most suitable branches of thought for a **machine** to exercise its powers following appropriate:
 - various games including chess,
 - the learning and translation of languages,
 - cryptography and mathematics.
- Turing believed: **the learning of languages most impressive, since it is the most human of these activities.**

Turing's Imitation Game: two formats



Simultaneous test: Judge interrogates two hidden entities in parallel

Viva voce: Judge interacts with one entity

Images from **Deception-detection and machine intelligence in practical Turing tests**. PhD Thesis.

University Reading, UK. 2011 - over 780 views on academia.edu

https://www.academia.edu/415888/Deception-detection_and_machine_intelligence_in_practical_Turing_tests

Non-bio vs bio intelligence

- Let's look at one exchange from a Turing test conversation

EXCHANGE 1:

Interrogator is human

Is the Entity human or machine?

Interrogator1:

all birthdays are special. name three items of clothing

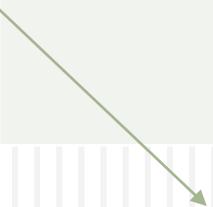
Entity:

Frank, James and Betty

EXCHANGE 1:
Interrogator is human
Is the Entity human or machine?

Interrogator1: all birthdays are special. name three items of clothing

Entity = human male adult Frank, James and Betty



Hidden entity's attempt at humour failed to secure a 'human' classification – humour is not always shared and in some cases culture-specific

In pairs again

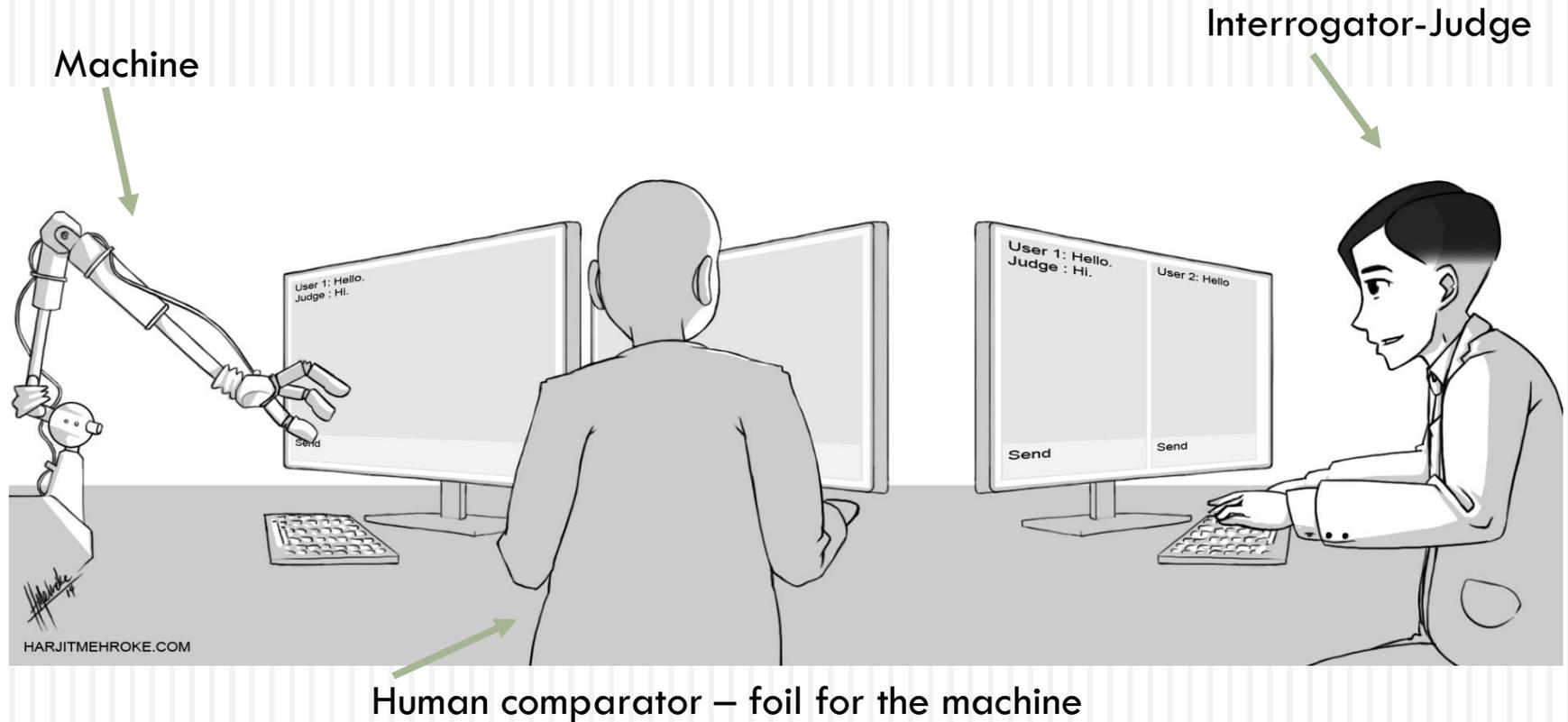
Now look at a Transcript of a simultaneous
comparison Turing test conversation

[what the judge saw after five mins of dual
interrogation]

are the responses to
utterances and questions

satisfactory and sustained?

Turing's language imitation game



Simultaneous transcript from Turing 1 00

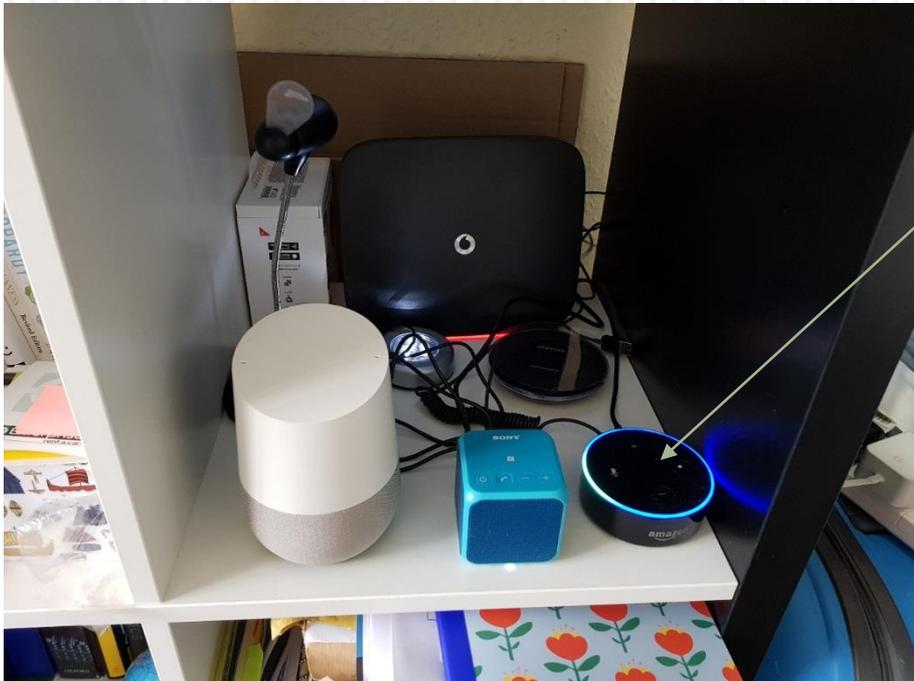
LEFT: Judge J19 with Hidden-Entity: human or machine?

[12:23:13] Judge: hi there
[12:23:18] Entity: Howdy pal! Today is a kind of never-ending talk-show, I'd say!
[12:23:38] Judge: yes. nice!
[12:23:43] Entity: So we are on a same page. Oooh. Anything else?
[12:24:13] Judge: what page? FB?
[12:24:19] Entity: Huh? Could you tell me what are you? I mean your profession.
[12:24:56] Judge: i am not allowed to say that. what are you doing for living?
[12:25:09] Entity: I'm wondering if Doctor Loebner is a human. I suspect that he is a cyborg - and he's playing games with us by running this competition.
[12:25:46] Judge: slow down a bit. where do you put your money?
[12:25:52] Entity: Money-money-money, not so funny... Do you want to win a million?
[12:26:23] Judge: not really, are you a saver or spender?
[12:26:31] Entity: Hmm... I would assume otherwise. And I forgot to ask you where you are from...
[12:26:56] Judge: I am from bristol.
[12:27:02] Entity: Tell me more about Bristol. I like to learn about different places!
[12:27:22] Judge: ok. but please let me know more about you?
[12:27:38] Entity: Oh, if I tell you about myself, I'll definitely be dishonest:-) Well, I am a son of Rockefeller, I've arrived here in the Limo... I know you are supposed to trick me.
[12:28:07] Judge: wow. go on
[12:28:14] Entity: Yes, everyone would be amazed hearing that. I know you are supposed to trick me

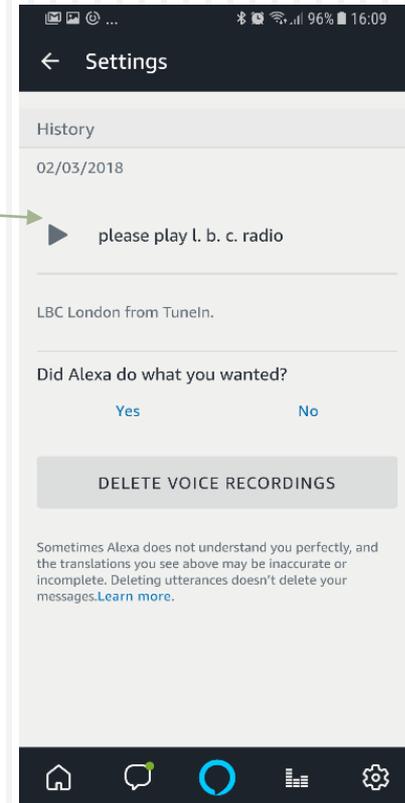
RIGHT: Judge J19 with Hidden-Entity :
human or machine?

[12:23:23] Judge: good evening
[12:23:28] Entity: Wonderful evening isn't it?
[12:23:58] Judge: yes indeed. it is raining over there?
[12:24:02] Entity: What time is it anyway?
[12:24:24] Judge: min-night?
[12:24:28] Entity: Ugh. I need more sleep.
[12:25:18] Judge: only joking? do you like jokes?
[12:25:24] Entity: Alright then.
[12:26:05] Judge: do you like diamond jubilee?
[12:26:13] Entity: lol.
[12:26:37] Judge: why lol?
[12:26:44] Entity: oh, I get it. :)
[12:27:48] Judge: I really like you. do you think machine can fell in love?
[12:27:55] Entity: I like the Man Machine album.

Current non-bio language technologies



Amazon
Echo with
Alexa



Language / listening systems



Assistant

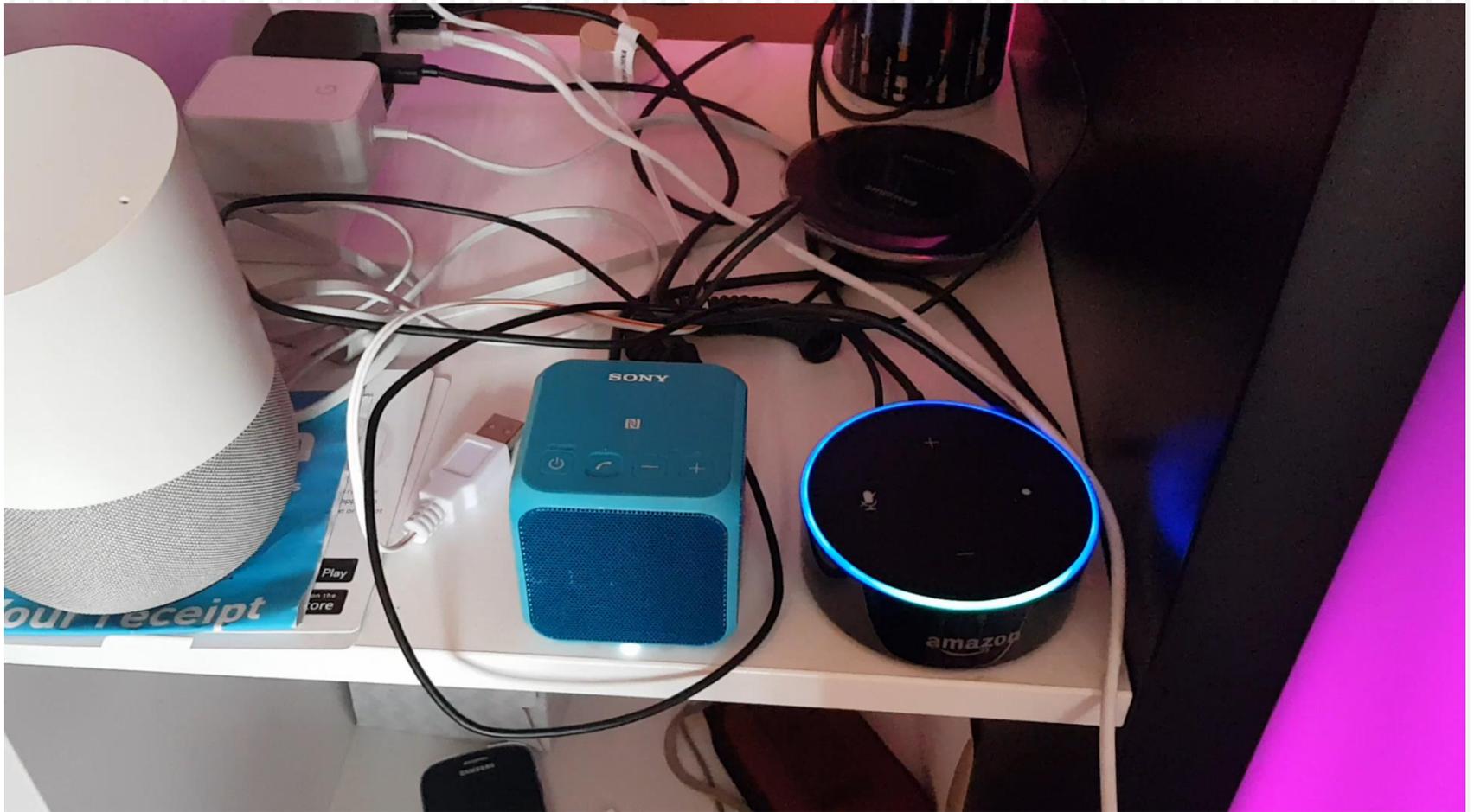
Said please play LBC News radio thank you

I looked for LBC News radio thank you on Google Play Music, but it either isn't available or can't be played at the moment.

Google Home



Another query to non-bios [video]



Huma Shah: FAH-Open Day June 22, 2018: Coventry Transport Museum

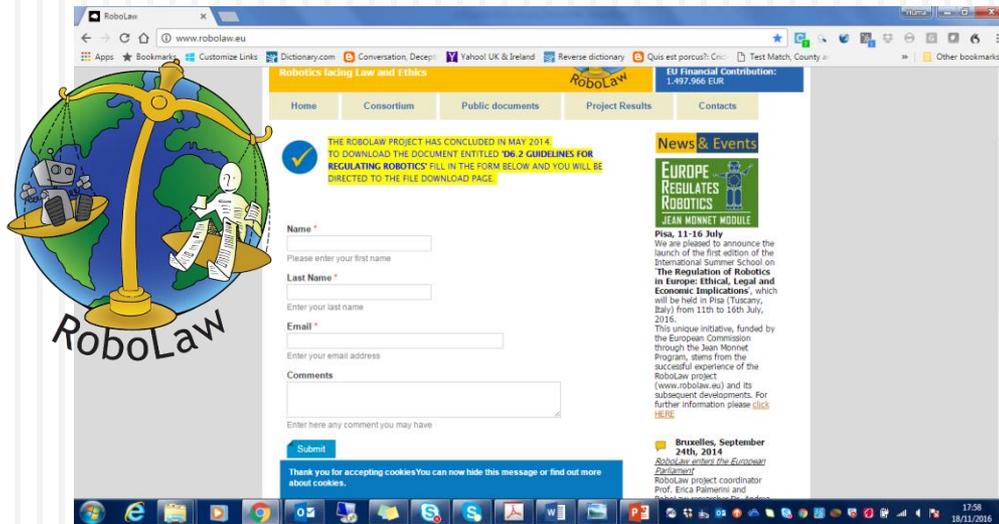
- “...since the **speaker** [Huma] doesn't quite know the **organization** of his **hearer's mind** [Alexa & Google Home], his **phrasing of information and packaging must**, except for the most stereotyped conversations, **be an artwork of suggestiveness and insight.**” (Drew McDermott, 1976)

Future of intelligence

- Machines are not there yet, but when a non-bio entity can provide satisfactory and sustained answers to any question that “would not be an easy contrivance” (Turing, 1950)
- It would also not be artificial, the intelligence would be real, even if non-bio

My work: Trust in Conversational AI

PhD Supervised by Prof (now Emeritus) Kevin Warwick



CAMBRIDGE

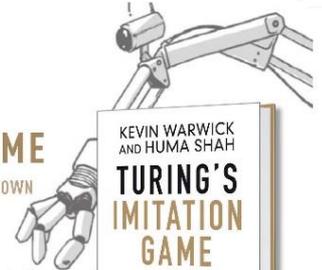
TURING'S IMITATION GAME

CONVERSATIONS WITH THE UNKNOWN
Kevin Warwick and Huma Shah
Coventry University

The Turing Test, or Imitation Game - devised by Bletchley Park codebreaker Alan Turing - pits the human mind against machines, testing a machine's ability to replicate 'human' responses. This compelling book by Kevin Warwick, the world's leading expert in AI and Cybernetics, and Huma Shah, offers a detailed look at the Turing Test and its significance today, providing a fascinating introduction to Turing's ideas for anyone interested in the world of computer science or artificial intelligence.

What significance does Turing's Imitation Game have in the world of artificial intelligence?
How is this related to cyber-crime?
Does passing the Turing test mean the end of humanity?

- Contains numerous transcripts of 'conversations' between people and the programs designed to emulate them
- Readers have the chance to try it for themselves - can you tell which is human and which is machine?
- Includes a brief introduction to the field of Artificial Intelligence with no mathematical background required



Coming in October 2016
256 x 177 mm 320pp
978-1-107-05638-1 Hardcover £24.99 \$39.99

Kevin Warwick is an Emeritus Professor in the School of Computing, Electronics and Mathematics at Coventry University. He is one of the world's leading experts in cybernetics, robotics and artificial intelligence and became the world's first Cyberneticist in a groundbreaking set of scientific experiments. He is the author of *Robotic Intuitions: The Rise and Fall of Cyborgs*.

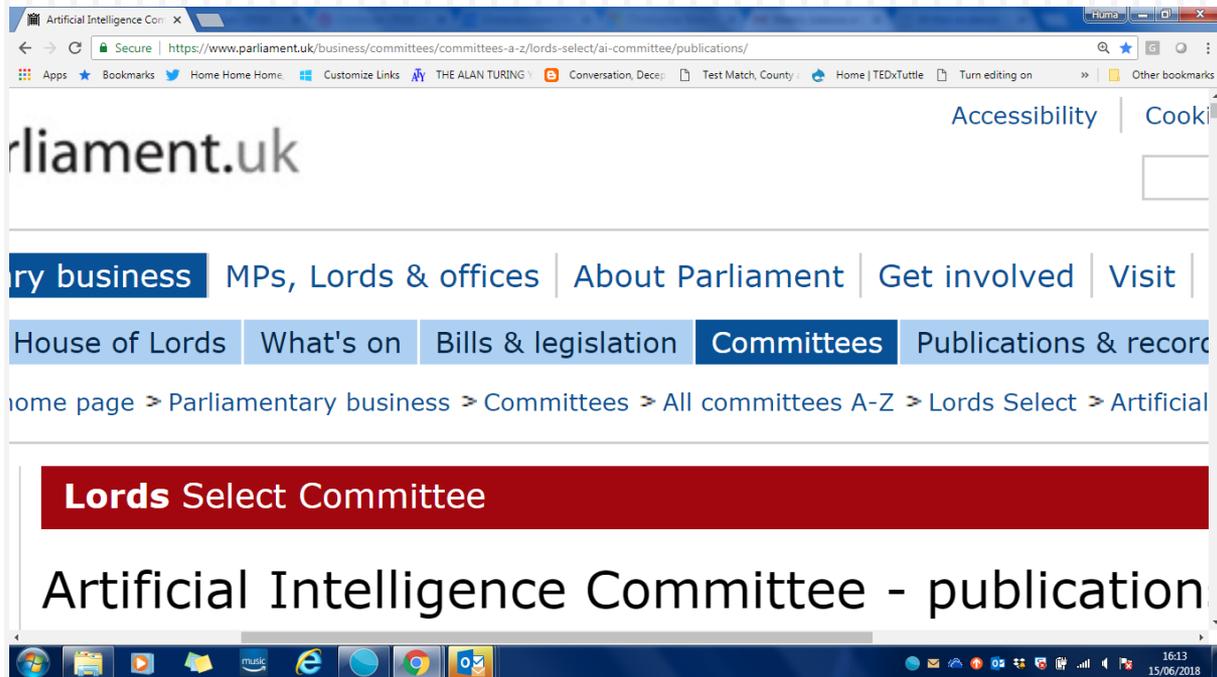
Huma Shah is a Research Fellow in the School of Computing, Electronics and Mathematics at Coventry University. She acted as judge in the 2005 Charles Babbage Challenge and organised the Lecturer Prize for Artificial Intelligence in 2006 and 2008. She was a Research Fellow on the EU FP7 Robotics project which coordinated the ethical and legal issues facing robotics and emerging technologies. She co-edited the Turing100 project at Bletchley Park in Alan Turing's centenary year (2012) and the Turing2014 Turing Test experiment at the Royal Society, London in June 2014. Her articles on AI are research and publications on patent law Turing tests.

www.cambridge.org/imitationgame

CAMBRIDGE UNIVERSITY PRESS

Huma Shah: FAH-Open Day June 22, 2018: Coventry Transport Museum

Evidence in House of Lords' AI Select Committee Report



Shah & Warwick contribution to House of Lords' AI 2017 written evidence:

<http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/artificial-intelligence-committee/artificial-intelligence/written/69505.pdf>

References

- **McDermott, D. 1976. ‘Artificial Intelligence meets Natural Stupidity’** *ACM SIGART Newsletter*, April, pp. 4-9
- **Turing, A.M., 1950, ‘Computing Machinery and Intelligence’.** *Mind*, Vol. 59 (236), pp. 433-460
- **Turing, Alan M. 1948, ‘Intelligent Machinery’** in S.B. Cooper and J. van Leeuwen (Eds) *Alan Turing: His Work and Impact*, 2013 (Elsevier), pp. 501-516

Thank you for listening, any questions?

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<https://scholar.google.co.uk/citations?user=cmS6qXQAAAAJ&hl=en&oi=ao>

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