# Alan Turing & the Imitation Game - AI

Podcast Discussion + Video

- The Cyberwire "Cops in the Catfish game" Start @ 3:41, Stop @ 6:26
- The Imitation Game - "Are You Paying Attention" - Start @ 1:10, Stop @ 3:21
- The Cyberwire "Cops in the Catfish game" Start @ 8:34, Stop @ 17:39

The following 3 sections are divided into the pre-video discussion from a podcast (Hacking Humans Goes to the Movies - Ep 24 "Cops in the Catfish Game"), the actual video footage from the movie "The Imitation Game", and the post-video discussion from the the same podcast.
Discussion questions:

- Who is Alan Turing?
- What defines intelligence?
- What is the Imitation Game (as discussed in the video) - also known as the Turing Test?
- Can computers think?
- Are computers intelligent? (Is that a different question?)

## Pre Video Discussion

Podcast Discussion: The Cyberwire "Cops in the Catfish game" Start @ 3:41, Stop @ 6:26

(beginning of video - play the actual video clip instead)

Transcript:

**Rick Howard:** My clip this week comes from the 2014 movie, "The Imitation Game." Have you seen it Dave?

**Dave Bittner:** No I'm not familiar with that one.

**Rick Howard:** Oh, this is one of my all-time favorites. It's directed by Morton Tyldum and he's probably most famous to our audience for the Netflix TV series, Tom Clancy's "Jack Ryan." The movie stars Benedict Cumberbatch most famous for the excellent BBC TV series "Sherlock" and the six-year and six-movie run in the Marvel Cinematic Universe playing "Dr. Strange."

**Dave Bittner:** Yeah, that's probably where I know him best.

**Rick Howard:** Yeah. That's -- yeah that's where he gets his most fame [laughter] I guess, right? But in this scene he's playing one of my all-time computer science heroes, the inspirational Alan Turing and.

**Dave Bittner:** Yeah.

**Rick Howard:** You've heard me talking about him before Dave, I.

**Dave Bittner:** Oh, sure.

**Rick Howard:** He is -- he is responsible okay for three groundbreaking events in computer science history, so let me list them. Number one, he proved mathematically back in 1937 that a computer could actually be built up there -- up to that point, it's just kind of theoretical. He wrote this paper called "On Compute," note this is a big one. Let me see if I can say all this, "On Computable Numbers, With an Application to the Entscheidungsproblem."

**Dave Bittner:** Okay.

**Rick Howard:** So, say that three times.

**Dave Bittner:** Yeah.

**Rick Howard:** Real fast.

**Dave Bittner:** Easy for you to say.

**Rick Howard:** Well, that paper is now regarded as the theoretical foundation for all modern computing, right, so that's number one. Number two, is that his significant contribution to the Allied efforts in World War II in breaking the German EGNIMA coding machine between 1939 and 1942 and that's what this movie is about. It's all about how they did that and it's fantastic, right? But number three, he defined one of the first tests for artificial intelligence called the "Imitation Game" in a paper he wrote in 1950. So, in this scene from the 2014 movie, Turing describes the Rory Kinnear, people know him from being M's deputy in the 007 movies. And one particular episode in a "Black Mirror" TV show where a pig was involved in a hostage situation and I don't know if you're familiar with this, right? But I'll let the audience discover what that means on their own.

**Dave Bittner:** Okay. Alright, anything you need to do to set this clip up?

**Rick Howard:** No. It's just those two talking and he's -- it is the best explanation I think of what artificial intelligence is. So, Mr. Kinnear talks first.

# Video

Video: The Imitation Game - "Are You Paying Attention" - Start @ 1:10, Stop @ 3:21

**Detective Nock:** Alright. Could machines ever think as human beings do?

**Alan Turing:** Most people say not.

**Detective Nock:** You're not most people.

**Alan Turing:** Well, the problem is you're asking a stupid question.

**Detective Nock:** I am?

**Alan Turing:** Of course machines... can't think as people do. A machine is different... from a person. Hence, they think differently. The interesting question is, just because something, uh, thinks differently from you, does that mean it's not thinking? Well, we allow for humans to have such divergences from one another. You like strawberries, I hate ice-skating, you... cry at sad films, I... am allergic to pollen. What is the point of-of different tastes, different... preferences if not to say that our brains work differently, that we think differently? And if we can say that about one another, then why can't we say the same thing for brains... built of copper and wire, steel? And that's...

**Detective Nock:** This big paper you wrote? What's it called?

**Alan Turing:** The Imitation Game.

**Detective Nock:** Right, that's...that's what it's about.

**Alan Turing:** Would you like to play?

**Detective Nock:** Play?

**Alan Turing:** It's a game. A test of sorts. For determining whether something is a machine or a human being.

**Detective Nock:** How do I play?

**Alan Turing:** Well, there's a judge and a subject, and...the judge asks questions, and, depending on the subject's answers, determines who he is talking with...what he is talking with, and,...all you have to do is ask me a question.

# Post Video Discussion

Podcast Discussion: The Cyberwire "Cops in the Catfish game" Start @ 8:34, Stop @ 17:39

(Stop when they transition to the next movie they're analyzing)

**Rick Howard:** What do you think Dave?

**Dave Bittner:** Well, I loved it. I mean, so this is the Turing Test right?

**Rick Howard:** It's the Turing Test. Absolutely. And it's been used by computer

scientists since then to decide if a computer is able to think.

**Dave Bittner:** Yeah.

**Rick Howard:** And when you -- and one I -- the reason I love this clip is because you know with ChatGPT coming out last year, late last year, and all the large learning modules that we're been messing with since then, there have been a lot of people claiming that we are very close to a computer passing the Turing Test.

**Dave Bittner:** Yeah.

**Rick Howard:** So, when they say that's what we're talking about. In fact, there is a Google engineer that got fired, okay, back in July of 2022. His name was Blake Lemoine I guess is how you say that?

**Dave Bittner:** Yeah, yeah.

**Rick Howard:** But he was -- yeah -- he was saying out loud that -- that basically his LaMDA little chat function, machine-learning module, passed the Turing Test when he was having, you know, conversations with it every night as a pal, okay? So.

**Dave Bittner:** Right.

**Rick Howard:** That's what we're talking about.

**Dave Bittner:** He was making.

**Rick Howard:** Yeah.

**Dave Bittner:** The case that it was sentient.

**Rick Howard:** Yeah.

**Dave Bittner:** Yeah.

**Rick Howard:** That's what -- yeah, it's basically passing that when you can't tell if the machine is a human or not, then it's basically sentient for all practical purposes. Right now, there's a lot of computer science people that have had better definitions, better tests for artificial intelligence since then, but this was the original, alright and Turing did it be himself. It's one of the reasons I love him so much.

**Dave Bittner:** Well, you know, I love this too and, you know, you and I are both old-timers here when it comes to computer stuff. Do you remember Eliza?

**Rick Howard:** Of course I -- yes. Eliza was this fantastic thing.

**Dave Bittner:** Right.

**Rick Howard:** Describe what Eliza was. Alright, so yeah.

**Dave Bittner:** So, well Eliza goes back further than my initial contact with it. So, I first came across Eliza - someone had ported Eliza to BASIC, you know, BASIC was the

computer language that came with your Apple II's and your TRS80s and your Commodor 64s, your VIC-20s, you know, they all came with BASIC built-in. And I think Eliza had originally been written for some of those old, you know, college mainframes and you know shared.

**Rick Howard:** Yeah.

**Dave Bittner:** Around the Arbinet and all that kind of thing, but basically Eliza was someone's attempt at a computer therapist simulation. And the magic of Eliza was that it answered all of your questions with questions.

**Rick Howard:** Yeah. A little -- a little behavioral analysis trickery, okay?

**Dave Bittner:** Right.

**Rick Howard:** That is, you know, and that it seemed like it was talking to you, yes.

**Dave Bittner:** Right. And it was very compelling. You know, you would say "I'm a" -- and it would say, "Hi, I'm Eliza," you know, "what's your problem?" And you would say, "I'm having trouble with my mother." And it would say, "Tell me about your mother." Say, well "my mother, you know, never lets me borrow the car." "Does it upset you that your mother never lets you borrow the car?" You know, it was that -- that kind of thing and it would keep going. My recollection, and it's quite possible that this is a false memory, but my recollection is that every now and then Eliza would hit you with a zinger like, you would be talking with Eliza for a while and then it would come back and say, "Does this have anything to do with your mother and your car?" And you would be like, "Well, uh!" You know, but it's quite poss -- and there were different versions of Eliza and.

**Rick Howard:** Sure.

**Dave Bittner:** You know, people who weren't back -- who didn't live through that period of time, it's hard for you to imagine how little memory and processing power we had. About a year ago, I went and I looked up the source code for Eliza and it is -- there's noth -- there's not much there.

**Rick Howard:** Nothing there, yeah.

**Dave Bittner:** You can read through the BASIC coding in just, you know, there's not much there because there wasn't room for there to be much there. But it was.

**Rick Howard:** Right.

**Dave Bittner:** Compelling.

**Rick Howard:** Well, I think the interesting thing about that is that was written in computer languages.

**Dave Bittner:** Right.

**Rick Howard:** That are basically step-by-step that tried to anticipate everything you

were going to say and it was very good at it.

**Dave Bittner:** Um-hmm.

**Rick Howard:** Right? And that seemed like it might pass the Turing Test.

**Dave Bittner:** Yeah.

**Rick Howard:** With these new large language models, that's not how that's being done at all. It's not trying to have an answer for everything a person might ask them. It is having a collection of data, right, and then being able to understand what the human wants when they ask the question and the computer figures it out on their own, right? Which is, that's the -- that's this giant leap that we've been talking about with these large language models.

**Dave Bittner:** Yeah. And, you know, my -- I think you and I might be thinking along similar lines here, in that I hear a lot of people poo-pooing things like ChatGPT and saying "Oh, that's not really thinking" and it's not really this, there, or the other thing. And I can't help wondering if that's a distinction without a difference.

**Rick Howard:** I believe that too and if you just use Turing's definition that we saw on this film clip, okay, it doesn't really matter in the long run.

**Dave Bittner:** Yeah.

**Rick Howard:** Okay? It doesn't matter how it's done. If the humans can't tell, right, then it's for all intense and purposes, it might as well be, right? And you can see where there are lots of applications in a very specific domain that we're very close to passing the Turing Test, you know, with Alexa.

**Dave Bittner:** Right.

**Rick Howard:** Close to it with self-driving cars, very close to it. And all of these things in the next ten years or so are all going to come together and that it's going to be so much better, right? Alright, so that's the positive spin on it. The negative side is, we've all been using this thing -- these ChatGPTs for you know a little over a year.

**Dave Bittner:** Yeah.

**Rick Howard:** And it makes a lot of mistakes just like humans do.

**Dave Bittner:** Sure.

**Rick Howard:** Okay? And so my -- my current evaluation of those modules now are, you know, they're -- it's just a little bit bigger than wiki -- a little bit better than Wikipedia, right? But you know, so and it does something's really well.

**Dave Bittner:** Yeah.

**Rick Howard:** But other things it completely misses, right? And so, we're not quite

there yet.

**Dave Bittner:** No. I think if you put guardrails on it and you give it a specific task that is self-contained it can do an extraordinarily good job. But I think, in particular, if you go out and ask it for some facts about something, then you have to be really careful, because it will make things up. Now, getting back to this thing with Turing though, the other thing that really stimulates my imagination with this is the notion of different kinds of intelligence. And, you know, at the outset here, I was joking about -- well not maybe joking -- about the cephalopod that swallowed me whole, but.

**Rick Howard:** Joking -- no.

**Dave Bittner:** Scientists are looking at things like -- like octopus, right? Like they're looking at octopus and saying that that it's a different kind of intelligence than we have. There's absolutely intelligence there. You know, there's these stories of aquariums having an octopus that will squirt water out of their tank to turnout a light that's annoying them.

**Rick Howard:** Annoying them, yeah.

**Dave Bittner:** You know, things like that. They can think. They can solve puzzles. But it doesn't seem to be the same way that we do. Their nervous system, their -- it's just distributed in a different way. Compared to us, it's a little alien and I think that's fascinating.

**Rick Howard:** Well, that's what Turing said in the clip, right, just because they don't think like us doesn't mean.

**Dave Bittner:** Right.

**Rick Howard:** They're not thinking, right? And we.

**Dave Bittner:** Right.

**Rick Howard:** And we have in our minds we have these milestones for you know what makes things intelligent and one of them is language and, you know, being able to solve problems, and we can see lots of it in the animal kingdom where some animals species are -- can communicate with their own and can solve, you know, problems that maybe seem simple to us, but they're -- it's still problem-solving.

**Dave Bittner:** Yeah. I saw -- I saw a story just yesterday where someone was visiting an animal rescue organization, you know, where they bring in wildlife that's been injured, and this place had a couple of crows that had been brought in and the crows were -- and crows are one of the kinds of birds that have the certain ability to speak or to mimic, right? And the crows were saying "Caw, caw" with a human accent.

**Rick Howard:** Oh my.

**Dave Bittner:** And the person who was visiting the facility asked the person running

the facility like "What's this about? Why are the crows saying caw-caw with a human accent?" And the person running the facility kind of rolled their eyes and said, "They're making fun of us." [ Laughter ] That's what we sound like.

**Rick Howard:** And there you go! That is thinking, right?! I love that, right. If you can make bad jokes, I mean you're in, okay?

**Dave Bittner:** Yeah. Yeah, exactly. The crows are tired of us seeing crows and going caw-caw!. They're like, "Oh, come on. That's not what we sound like."

**Rick Howard:** Get it right.