AI Dirty Dozen 2020 Part III (<https://mindmatters.ai/podcast/ep115>)

Robert J. Marks:

We continue our countdown of the top dozen hyped AI stories of 2020 today on Mind Matters News.

Announcer:

Welcome to Mind Matters News, where artificial and natural intelligence meet head on. Here's your host, Robert J. Marks.

Robert J. Marks:

Greetings. For our countdown we are joined by two members of the Bradley Center Brain Trust. Jonathan Bartlett is the director of The Blyth Institute, and he's a senior fellow with the Bradley Center. Jonathan, welcome again.

Jonathan Bartlett:

Well, thanks for having me on, Bob. It's an honor to be here.

Robert J. Marks:

And we're having fun, aren't we? It's fun just to get together and chat. Dr. Eric Holloway is our other member of the Brain Trust. He works for the National Institutes of Health and is a current captain in the United States Air Force. And he likes to be referred to as Doctor Captain is what he tells me. And Dr. Holloway is also a senior fellow of the Bradley Center. Eric, welcome.

Eric Holloway:

Thank you very much. It's great to be here.

Robert J. Marks:

Okay. We're down to the final four. This sounds like a basketball tournament. The final four. Number four of the hype list is Elon Musk is claiming self-driving cars will be here next year, again. And this was an article, which was, I believe, written by Jonathan for Mind Matters News. And I think that self-driving cars have made some advances, but this is clearly hype, isn't it, Jonathan? Tell us what's going on.

Jonathan Bartlett:

Bob, have you ever seen the movie Groundhog Day with Bill Murray?

Robert J. Marks:

Yes, I have. He wakes up to the same environment every day again and again and again. Yes.

Jonathan Bartlett:

Yes. And so this is what we have. Elon Musk has been claiming that he's going to have self-driving cars "next year" since 2016. Now, I have to say part of me loves Elon Musk and part of me can't stand the guy. And I appreciate his humor. I appreciate the fact that he is more approachable than a lot of the other tech billionaires, but there's also this huckster-ish salesmanship that just really drives me the wrong way. And so he's actually been selling self-driving cars since 2016. People are literally paying him thousands of dollars for this feature that doesn't exist. And he says, "Oh yeah, it'll be here next year. Next year, I promise."

Jonathan Bartlett:

And he says that your car will actually be worth more. Most people when they buy a car and they drive it off the lot, it's worth less as soon as you drive it off the lot. And he says, "Oh, our cars are going to be worth more because you're going to be able to make money with them by simply sending ... when you go to sleep, you can send them out to earn money for you by being a robo taxi, so you don't have to be there." And he makes claims like this, and he makes them every year. And it's not surprising that he's making them right now because last year, he did it right before a $2 billion capital raise for his company. And now, he's doing it right before a $5 billion, that's billion with a B, a $5 billion capital raise.

Jonathan Bartlett:

And so he keeps on. In 2016, he said that you're going to be able to summon your car from across the United States. And it would be able to come and get you on its own, finding charging stations on the way. And it wouldn't even need a driver. And he said the only thing that could stop that was if we didn't get regulatory approval. Anyway, he keeps on saying that it's going to be next year, next year, next year. He's saying it again. And anyway, I just wish the media would stop falling for it.

Eric Holloway:

Isn't his company supposedly now worth more than Apple?

Jonathan Bartlett:

Oh yeah. So, basically, he's got this company ... so Tesla Motors, it's a tiny percentage of the car market, but it's basically worth more than the rest of it combined in terms of the value of the stock.

Eric Holloway:

Yeah. Who said you can't make money with science fiction?

Jonathan Bartlett:

Exactly.

Robert J. Marks:

Okay. Well, George Gilder, who is one of the co-founders of The Discovery Institute, in an interview said that Elon Musk is a tremendous entrepreneur, but kind of a retarded thinker, which I thought was an interesting statement. And in a conversation that I just had with Gregory Chaitin, that's going to be a podcast which comes on in a while, he said his heroes in life were Stephen Wolfram and Elon Musk. He really thinks highly of Elon Musk and his innovations. And, clearly, he's done some stuff, but he's also a salesman, isn't he?

Jonathan Bartlett:

Yeah, indeed he is.

Eric Holloway:

Well, on that note, Elon Musk's innovation just look like somebody read a couple of sci-fi books and decided to try and sell the ideas to the government.

Robert J. Marks:

Okay. Okay. You're really high on Elon Musk, I can tell you. The challenge with self-driving cars, as I've learned, is that there's five different levels. And there's this mushy fuzziness when he talks about self-driving cars. And he's assuming the top level, isn't he? Self-driving cars that will literally replace the human being in all sorts of environments. And I think that there's a lot of doubt that level five will ever be achieved. And the lower levels ... I think I learned from you, Jonathan, in one of your posts at Mind Matters News, that we're actually driving self-driving cars right now, according to the definitions of self-driving cars. Is that right?

Jonathan Bartlett:

Yeah. Basically, self-driving in the lowest levels, it just means that the car is doing some driving feature without you. And so if you think about cruise control, although most car companies don't use the term self-driving to refer to cruise control, that actually technically fits the definition of level one self-driving. Most of the time, if a car company refers to their cruise control as being self-driving, they're usually referring to adaptive cruise control, which also looks at the cars in front of them to see how fast they're going. But, really, any sort of cruise control technically fits the definition of level one self-driving.

Eric Holloway:

If my car were really badly out of alignment and did right-hand turns all by itself, would that be self-driving?

Jonathan Bartlett:

Indeed, it may.

Robert J. Marks:

Okay. That car has a mind of its own. My daughter has that thing on her car, which I drove, where you put the cruise control, and if somebody pulls in front of you, it automatically adjusts your speed to have three or four car lengths. And you can choose how many car lengths there is. And I love it. I don't have to wear out my thumbs in pushing all those buttons and slowing down and speeding up; it does it automatically. I like that, but that's at a lower level. And Musk, in talking about these things and driving across country, is assuming the level five, isn't that right?

Jonathan Bartlett:

Yeah. Level five means that basically you don't need a steering wheel and you can go anywhere. Any place that I would normally want to go with my car, there's no limits. I just tell the car where I want to go, and then I can go sleep in the back seat, and it will take care of everything.

Robert J. Marks:

My heritage is in West Virginia. In West Virginia, there are dirt roads, which are notched out of the mountains. Imagine a bunch of mountains, and you put a little cut in the mountains and those are the roads. And they're dirt roads, and they're single lanes. And you are driving along and you meet a logging truck coming at you, and you have to scooch over right to the edge of the road, where you're just about ready to fall over the cliff. And that logging truck just sneaks by you. I don't think self-driving cars at level five are ever going to achieve the skill of driving on a West Virginia road. I can't conceive of it.

Jonathan Bartlett:

Yeah. The thing that makes me doubt the ability for level five, that specific instance is a good one, but just in general, a lot of our city streets, the way that we drive, the way that the streets are set up, they're geared towards social navigation. That is we understand what the car next to us is doing. We can look at someone and wave them through. Sometimes you get other hand signals that are not as happy. And so there's a lot of social navigation. Actually, sometimes in really congested traffic, people will actually invent a lane. I've seen that happen before in traffic where in really crowded streets, if the street is wide enough, cars will just sometimes decide to, "Hey, let's add an extra lane to the street." And they'll crowd together into a new lane. And so there's all these social aspects to driving that I don't think that you're going to be able to code a computer to understand all of these different social aspects.

Eric Holloway:

Unless absolutely everybody else has their own smart car.

Robert J. Marks:

That's right.

Eric Holloway:

Now, they're going to enforce everybody to have their own smart car just so that one smart car will work.

Robert J. Marks:

Do you think that that's going to happen? Bill Dembski wrote a thing where he said that one of our choices is to either make the self-driving cars smart enough to appropriately navigate, or we are going to have to change the environment and all of the rules to adapt the artificial intelligence to us. And the question is which one do we do?

Jonathan Bartlett:

I think changing the environment is the one that's more likely to happen. And that's level four. Level four is basically where you say, within these defined parameters, the car will drive itself, with the additional stipulation that if the car ever goes outside those parameters, it has a safe enough way to get out of the way, out of the traffic, so that you don't have to immediately assume control. If you can imagine, let's say, you might have a level four that can navigate neighborhoods. It's going at a low enough speed that if it ever encounters a situation that it doesn't know how to handle, it could simply pull over and stop and wait however long you need for you to go and assert control over the vehicle.

Jonathan Bartlett:

But, level four, the car is doing all the operations. You can sleep in the back, but there's only a limited segment of road or a limited set of environments where it works. And that's where most self-driving, that's been successful, has gone. And so they've done high resolution maps of areas. They've determined that in certain locations there's not going to be a lot of unexpected things happening. They have streets that are easy to navigate. They are at low enough speeds that they're not going to hurt anybody. The roads are isolated enough that you're not going to worry about pedestrians accidentally coming across suddenly. And so by mapping it out and having enough knowledge of the environment, they can make a car for that environment. And that's generally what they've been doing when they're successful.

Robert J. Marks:

You know, Jonathan, we just did a paper with a student of mine, Sam Hege. And it was about the idea that the more complicated an AI system is, the more contingencies that you have. And many of these are unexpected contingencies. If you have a broad AI system, you're going to have all sorts of things which the AI is not programmed to respond to, and it's unavoidable. And it requires a heck of a lot of tests. This idea of the environment fooling you is very real. There's going to be lots of situations, lots of scenarios, that are unexpected.

Robert J. Marks:

So, we have that Elon Musk is claiming self-driving cars will be here next year. Again. Reliving Groundhog Day as Jonathan said, but we are making some advances in self-driving cars, but maybe not at the level five.

Robert J. Marks:

Number three: can AI really know when it shouldn't be trusted? The title of the article from Science Alert is Artificial Intelligence Is Now Smart Enough to Know When It Can't Be Trusted. Eric, what's going on here?

Eric Holloway:

Well, first of all, I'd like to note that the title does not say that AI can know when it should be trusted, so you could just have an AI that says never trust me. It's always going to be right.

Robert J. Marks:

That goes back to fundamental detection theory, right? You have a hundred percent detection, but you have a very high percentage of false alarms, too.

Eric Holloway:

Yeah. Now, as to what they actually did, they added some kind of confidence level to their results. If it's really low confidence, then you know you can't trust it. But, the converse does not apply. They can't say that when it has high confidence that you can trust it. There's a very solid, well-proven theorem called Gödel's Second Incompleteness theorem. And it says for any system that can reliably tell you that things are true or false, it cannot tell you that it itself is reliable. If they ever did create an AI system that can tell you, "Oh, you can trust what I say," then at that point, you know you precisely cannot trust it.

Robert J. Marks:

It reminds me of the Cretan Paradox. He says, "Everything I say is a lie." That's where you're getting to, is that right?

Eric Holloway:

Yeah. So, let's put back down to a more practical level. Let's say it does have some kind of confidence level and can say it's fairly non-confident about some results than others, you still may not even want to trust that lack of confidence level. There's another theorem called Rice's theorem, which says any non-trivial property of a program is impossible to program itself. You can't have a program that can always say that, "Hey, my confidence level is reliable." If they can precisely set it up in a constrained environment, then you can probably get some kind of confidence out of it, but they cannot do anything like the headline claims, which is a artificial intelligence that's smart enough to know when it can't be trusted. It's way too general to be something you can actually do with computers.

Jonathan Bartlett:

What's even worse is if you read the first paragraph of that article. The first paragraph of it just goes to total science fiction land. It says, "How might the Terminator have played out if Skynet had decided it probably wasn't responsible enough to hold the keys to the entire US nuclear arsenal. As it turns out, scientists may have just saved us from such a future AI-led apocalypse by creating neural networks that know when they're untrustworthy."

Robert J. Marks:

Oh, good grief. Okay. Yeah. One of the big problems with the AI hype is the confusion of science fiction with science fact. And people need to be more cognizant of that.

Robert J. Marks:

We're counting down the dirty dozen hyped AI stories of 2020 with Eric Holloway and Jonathan Bartlett. We're on number two. And this one just, I don't know, kind of makes me mad. Number two: Sam Altman's leap of faith. Eric, what is going on here with Sam Altman? Who is he? And what's his leap of faith, which is totally incorrect, I believe.

Eric Holloway:

I would actually say Sam Altman is totally correct. He's actually taking the AI trend to its logical conclusion because if AI is truly as great as it should be, we can actually reproduce human intelligence, and then it can feed into itself and then take off forever, then the crazy claims he's making here are actually correct. I would say it's not Sam Altman that's crazy; he's just the logical conclusion of a crazy movement. And he says stuff like, "I'm only going to focus on creating AI because once you get AI, it's going to embed absolutely everything else." He calls it the light cone of the future. And then he makes these funny venture capitalists sells, like instead of saying, "Hey, we're only going to give you a certain percentage of the profit." He says, "Well, once you get a hundred times return on what you invest in us, then we're going to have to give the rest to charity." He's obvious in trying to undersell his over-promising. Pretty hilarious.

Robert J. Marks:

This guy is no slouch. He is the ... what is he? The president of OpenAI or something like that?

Eric Holloway:

Yeah. Well, yeah, he has a fantastic history as a great venture capitalist. He came up with some company called Loopt when he was just in his early twenties. They sold for millions. And then he took control of Y Combinator, which is one of the most successful venture capitalist firms in Silicon Valley, which has a pretty nice lean startup approach, or at least they used to. And then he took that approach and even made it better. He has a great background. And so that's why I say he's not crazy; it's the movement that he's heading up. It itself is crazy. And he's just taking it to its logical conclusion.

Robert J. Marks:

A friend of the Bradley Center, Roman Yampolskiy, on April Fool's, put out a tweet on social media. And he said, "This is incredible. Google fires all of their programmers because they have developed a super AI that will write all of the programs of the future." And if you just think about that, it's just really ridiculous. Yet, he got a lot of thumbs up and he was even contacted by people in the media that said, "We want to talk more about this." And he said, "Look, it was a joke. It was simply a joke."

Eric Holloway:

Yeah. And so let's look at this from their perspective. If I told you, "Hey, I have this neat little black box, and you can plug anything you want into it. And this little black box will power it forever. It just creates energy out of nothing," no one would take me seriously. But, what Sam Altman is claiming is exactly equivalent of that but in information theory instead of with energy. And actually, if he was right about information theory, then you could probably actually turn that into a source of infinite energy, too. So, it's essentially the perpetual motion machine for computer science.

Robert J. Marks:

Yeah, that's very interesting. And, of course, this idea of AI writing better AI that writes better AI assumes that AI is creative. We don't have time to get into the so-called Lovelace Test, which is a measure of whether AI is creative or not. But, according to the Lovelace Test, artificial intelligence has yet to be creative.

Eric Holloway:

Yeah. And, in fact, well, the things we were just talking about, like the open GAN generating games and GPT generating texts, at least GPT ... actually that's part of the Sam Altman's company, and all of his AI advances, even though they're pretty remarkable in themselves, they illustrate exactly this. The only things they're doing is regurgitating all of their training data, just in more finer grain in interpolation between data points. But, it's all just reproducing what somebody else wrote. There is zero creativity in these AIs that have come out.

Robert J. Marks:

Wow, it's really an embracement of materialism and determinism, isn't it?

Eric Holloway:

Yeah. Yeah. And the ironic thing is that the more they buy into materialism, the less they actually create.

Robert J. Marks:

Right. And I think that our stance is well-grounded in computer science. And why people don't recognize this, I don't know. There's lots of people that believe AI will never be creative. This includes the recent Nobel Laureate, Roger Penrose and his book, An Emperor's New Mind. And Satya Nadella, who is the CEO of Microsoft, said basically the same thing. He said, "In the future, we're going to do a lot of things with artificial intelligence but creativity is always going to belong to the programmer." There's lots of people that understand the limitations of AI. Yet, there is still this, I don't know, theology out there that we're going to reach this idea of a singularity. No, it isn't going to happen. It isn't going to happen.

Eric Holloway:

Yeah. And I would say it is actually close to kind of a religious belief because I had this conversation with other people and I'm like, "Well, I'm skeptical that the mind can be reproduced with the computer," but then they'll say, "Well, I mean, we evolved. And all the things that evolved ultimately came from just physical laws and atoms bumping into each other, so at least in theory, we should be able to create AI." It is a logical deduction from a certain frame of reference.

Robert J. Marks:

Yeah. It's unfortunate. I still maintain AI will never be creative. It'll never be sentient. It'll never experience qualia. It'll never understand what it's doing. It'll add the number seven and three, but it doesn't understand what the number seven or three are. Yeah, so that's the limitations of AI, which is unfortunate and apparently not recognized by other people.

Robert J. Marks:

Okay. Number one: this is the number one of the dirty dozen hyped AI stories of 2020. And the number one has to do with Elon Musk again. By the way, number two, the Sam Altman, this OpenAI, that was an Elon Musk venture, right?

Eric Holloway:

Yeah. He collaborated with Elon Musk. Elon Musk is claiming AI is the biggest existential risk the human race faces, so he wants to make friendly AI.

Robert J. Marks:

Yeah. And the interesting thing, he never talks about what the second most extensional risk for humanity is. And I would actually put thermonuclear weapons as more of an existential risk.

Eric Holloway:

Yeah. Also, think about what they're claiming to be creating here. They're claiming to be creating an entity that is all powerful, all knowing. And since it's friendly, it's also all loving. What would be another name for such an entity?

Robert J. Marks:

God. Yes.

Eric Holloway:

Yeah, so they're basically trying to create their own God.

Robert J. Marks:

Yep. And in fact, that's the topic of the book by John Lennox, 2084, where he talks about artificial intelligence and some of the hyperbolic claims which are made about the future of artificial intelligence.

Robert J. Marks:

Okay. Number one has to do with Musk again. Mind Games: Elon Musk wants to connect your brain to a computer this year. And he says it's going to be awesome with his so-called Neuralink mind chip, which he is preparing to launch. I've read some about this. He's implanted it in some people, hasn't he? This is a report from the US Sun. Jonathan, what's going on here?

Jonathan Bartlett:

Neuralink is ... basically what he's done is he's created these ultra thin wires and kind of a robotic sewing machine that can insert these super thin wires into a brain. Musk's idea is that he basically believes that everything interesting that happens in your brain is basically electronic signals, and therefore, if he can get electrodes in there, anything that's wrong with your brain, if you can get enough electrodes pumping data fast enough, that he could fix whatever's wrong with your brain by simply offloading it to some sort of an external processor. And so that's the idea of Neuralink, that he can basically make a jack that connects an external computer into your brain and take over functions.

Robert J. Marks:

That's really strange. I think I'm already connected to a computer, but I don't have to have a chip in my brain; I use my fingers on my keyboard and that links me to all of the knowledge in the world. When are you going to get your implant, Jonathan?

Jonathan Bartlett:

I don't think I'll be trusting anybody with that anytime soon. It seems a little invasive. Although, some people are clamoring for it. They're like, "Yeah, I want to enhance myself." And part of me wonders if there are self-esteem issues that are circling around that.

Robert J. Marks:

That's interesting. Do you know if he's had any success at all in this Neuralink transplant, or?

Jonathan Bartlett:

As far as I'm aware, they haven't done anything with humans yet. I could be wrong on that, but generally, they've been doing rats or mice. Anyway, this all kind of traces back to ... I wrote an article about halfway through the year. Both level five self-driving and Neuralink, both have an interesting connection with them, and that is this myth about the mind. That the mind is just basically a computer processor. And this is kind of what you and Eric were talking about a moment ago, this myth about the mind, that all it is is just extended computation. And so for Musk, anything about the mind that's wrong, he can fix because for him, everything about the mind is signals. And so all he has to do is get something attached to your brain that's processing signals fast enough, and he can fix it.

Jonathan Bartlett:

Now, that's a presumption. It's actually a huge presumption. I imagine he's got to know that that's a big leap of faith, but he's pushing it as if he knows that that's the answer. And that's the thing that's frustrating is that the claims that he makes for this are just outlandish because he goes into things that we actually don't even know what the causes are. And he claims that Neuralink will be the solution. And to say that a device that has not even been tried out is the cure for something for which we don't know the cause, that seems a little over-hyped to me.

Eric Holloway:

He should rename his company "42".

Robert J. Marks:

Oh, is that the Hitchhiker's Guide?

Eric Holloway:

It's the answer to life, universe, and everything. 42.

Robert J. Marks:

Is that in the Hitchhiker's Guide to the Galaxy?

Eric Holloway:

Yep. Hitchhiker's Guide to the Galaxy. Douglas Adams.

Robert J. Marks:

Oh, that's kind of funny. Intelligent design: I think there's three reasons that we can have this complexity that we observe. One is an intelligent creator. The second one which is purported is panspermia, that all of this complexity was planted here on earth by some aliens. Elon Musk actually put forward a third hypothesis of intelligent design, which is that we are all simulations. We are all computer simulations. We live in a big SIM world. And I wonder how his Neuralink ties in with his theory that we are all simulations? Any ideas?

Eric Holloway:

Well, I think he's actually ... I don't think it's another company, but he's funding individuals who are trying to find bugs in reality, like the old movie The Matrix-

Robert J. Marks:

Wait. Bugs in reality.

Eric Holloway:

Yeah. Well, that's the conclusion. If you think we live in a computer simulation, and then presumably it's written in some kind of code, and if the coder is not perfect, then there's going to be bugs in our simulation. He's trying to find bugs in reality, kind of like the glitch in The Matrix.

Robert J. Marks:

Or kind of like the Truman Show when that big thing falls out of the sky.

Eric Holloway:

Yeah. Right.

Robert J. Marks:

My goodness.

Jonathan Bartlett:

Now, there's kind of a faulty logic that goes to why a lot of people think we live in a simulation. And I'll give you the logic, then I'll tell you what the problem is with it. And that is that if you imagine that we could simulate a universe, right, well ... so, let's say that there's only one actual universe, but then we figure out how we can simulate a universe. Well, as soon as we can simulate a universe, if we successfully simulate that universe, that means that in that universe that we're simulating, there are going to be creatures who figure out how to simulate a universe. And as soon as that happens, we're going to have more simulated universes than we have actual universes, and therefore, your chances of winding up in a simulated universe are actually much higher than your chance of existing in the actual universe.

Jonathan Bartlett:

And that's the logic that's oftentimes used. The problem with that is that it always takes more stuff to simulate something than the thing that you're simulating. For example, I can make a model of atoms moving around, but it actually requires entire computers, which are all made of trillions of atoms, to make that simulation. And so you actually wind up with a space problem that you can't simulate as much as you have reality. And so even if you could make a perfect simulation of reality, it would have to be a smaller reality than what you're simulating it with.

Eric Holloway:

What if it was a bunch of nested lossy simulations?

Jonathan Bartlett:

That's possible, but then you'd have to ... you'd wind up being really lossy really fast.

Robert J. Marks:

I'm sitting here, getting back to the Neuralink, trying to understand what the Neuralink would do to me currently. I can only keep a couple of things in my brain. If I multiply two three digit numbers, I have to write them down. And I can't do the whole thing. I do it one step at a time, right? Going through all of the multiplication processes, the little algorithm that we use to multiply two three digit numbers. And so the brain only has this capacity of keeping one thing in the forefront of your mind at one time. I'm trying to understand how Neuralink would improve that. I'm not sure. Maybe it can. Maybe there is something that can be done, but do any of you have any thoughts on that?

Eric Holloway:

It would make identity theft really interesting.

Robert J. Marks:

How is that?

Eric Holloway:

Well, say it worked. I mean, hackers are hacking all our bank accounts, then next they'll be hacking our brains and taking over our actual bodies.

Robert J. Marks:

Oh my goodness. Do these Neuralinks, do they have any wireless connections? Do you know? I hope not. I hope not.

Robert J. Marks:

Hey, we've been working our way through the dirty dozen hype list with Bradley Center Brain Trust members, Eric Holloway and Jonathan Bartlett. We are not going to be totally negative. We are on a subsequent podcast going to go through the top 10 smash hits of artificial intelligence for 2020. There's lots of exciting stuff happening in artificial intelligence. So, until then, be of good cheer.

Announcer:

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