

## **Podcast Transcript**

### **The Lion's Den: Demystifying Artificial Intelligence - Episode 6 AI's Impact on Manufacturing: Enhancing Efficiency and Automation**

[Rupert Lion](#), Managing Partner, [Boyden United States](#)

Rupert Lion (00:01.452)

Hi, and welcome back to the Lions Den and our demystifying AI podcast. So today we have David Ellison with us and David is an accomplished data scientist and leader in the AI space. So we're quite excited about this because he's a true veteran of the industry. He's currently at Lenovo and he's kind of renowned for his leadership across the whole of the AI space and data science, digital transformation, that sort of thing.

He was recognized on that basis as one of the top 10 data science leaders to follow in 2023. And he's made huge contributions across the field with his work at, for example, Lenovo's AI Discovery Lab. he's worked on a bunch of interesting and innovative projects, such as the Smart Pitbox for NASCAR. And this highlights his expertise in generative AI, computer vision, and a bunch of other things. So he's had a commitment to responsible AI practices, which we always love to hear. And he founded

Lenovo's responsible AI committee and his extensive experience includes developing a bunch of groundbreaking AI solutions, driving business transformations and earning accolades like the top 10 influential tech leaders to follow in 2024. So quite a bunch of accolades there, pumped to have you on and to dive into your insights and experiences in the world of artificial intelligence. So welcome David.

David Ellison (01:18.658)

Thank you. I'm always happy to talk about AI. It's one of my favorite topics.

Rupert Lion (01:22.86)

Good, good, good. Well, that's what we like to hear. Well, look, as we kind of kick off, maybe just in the first instance, just so our listeners can get to know you, could you just maybe give us the kind of the quick overview of who is David and what's he been up to for the last many years of his

David Ellison (01:38.138)

Okay, well I started off my career getting my PhD in biomedical engineering at Johns Hopkins. That was before data science was a thing and I actually had a problem getting a job as a biomedical engineer and someone said there's this new title out there. There's this new thing, it's called a data scientist. Maybe you should apply in that area. And I applied and stayed there and got a job instantly and it's been a wild ride since.

So I was at the beginnings of the industry of the data science field, worked independently at a startup that I founded and then also at the US Postal Service and now I've been at Lenovo about seven years.

Rupert Lion (02:19.544)

Well, so as I sort of mentioned before, I guess it's been a long journey in the world of, I guess, both data science and artificial intelligence, frankly. So tell me, it's interesting to have you on because I think everybody in the world now suddenly has artificial intelligence or AI, Gen AI at the top of their agenda, right? They didn't have it at the top of their agenda 18 months ago or two years ago. You've had it at top of your agenda for decades.

So tell me how that feels seeing this change and this movement in the market and in the zeitgeist. Is it something that you relish? Is it something that you think, my goodness, this is just business as usual and people are just finally working this out. What are your thoughts on how the world is now suddenly latching on to AI

David Ellison (03:03.77)

Well, you know, I've gone through the hype cycle of AI a few times now, you know, where it were explodes and it recedes. It seems it seems a little different this time. But for example, I was interested in AI back in my undergraduate and then it was an AI winter and everyone was like, you don't you don't put AI on any funding grants because nobody nobody gives any money to AI. And that is that's the total change is told zeitgeist change in what's been happening. It's so much easier now to

spend and get investment in AI But overall, you know, you have to remember that AI has to return on investment in order to be valuable It can't be just be can't be doing AI for AI sake So if this is to continue and if if this excitement is continued, we've got to focus on getting AI to deliver ROI

Rupert Lion (03:53.336)

Yeah, and I guess that would be the argument for why there's been such significant interest in investment in the last 18 months, because we've, I guess, since 2019, when we kind of really changed the nature of transformers and things that now we're at a place where we really can do some fascinating stuff with AI. Do you believe that there's been a step change in the last 18 months to two years, or maybe four years, let's say, or actually has this been a linear progression and it's just for some reason the market's now waking up?

David Ellison (04:21.806)

No, think there has been something foundational that changed with the generative AI explosion. Now, generative AI has been around for a while. mean, you know, this has been around, you know, ever since I was in my undergraduate and before that. But generative AI really with the chat GPT and, you know, open AI and, you know, all those investments out there, it's really changed fundamentally the way that we think about AI

you know, before it was thinking about AI as just a predictive, you know, power. Now with the generative, it adds an entirely new capability for AI

Rupert Lion (04:59.436)

Yeah, and I think that's where people get excited about generation of interesting, I guess, outputs that they couldn't have thought of before, because that's why we're always getting interested with AI. And I think a lot of people find this fascinating is you take something which you as a human could understand, analyse and get to a conclusion on. If you look

AI and see it doing the same thing, that's interesting, but it's not as interesting as AI coming up with something totally innovative and novel, which you hadn't thought of before. And my sense, and I could be wrong, but particularly in the last, even in the last six months, when it comes to generative AI, it started to move in that way. It used to be 12, 18 months ago that the early chat GPTs and things would give you an answer that you expected. I now feel like we're moving to a place where they're giving you an answer you wouldn't expect, but are still relevant and interesting.

Do you feel like that's something that's happening at moment as well?

David Ellison (05:55.918)

Yeah, there's been a lot of developments in the generative AI space. There's a lot of advancements happening. I just met with a company developing foundation models this morning. It was very interesting. The advancements they're they're trying to get models that are more efficient, that are more effective, and have that temperature change. They call it temperature, that ability to add unexpected insights.

into the generative AI, can change the temperature of that.

Rupert Lion (06:28.16)

And how do they think about that? Because obviously to the lay person, a lot of this nuance really comes from the training of the models. And I guess a lot of people's concerns are, well, you can only train them with the data you've already got, which therefore means it's kind of self-fulfilling, or with people to sit there and review the training and make sure that it's acting in the right way and not going kind of off balance. But how do you ensure that it also has the ability

really be generative and really create and really do things that are different. Are there other kind of technical ways they do that?

David Ellison (07:03.994)

I mean, I think that's part of the innovation of the transformer and other basic technology blocks in generative AI. Previously, was like GANs, generative adversarial networks, that were the hot thing in generative AI. They keep on developing new and new algorithms that are able to add variation, that are not just able to regurgitate. There was a thought a while ago or a famous paper called

you know, calling natural language processing a stochastic parrot. That it just repeats statistically what you think. I think we are seeing now a change from that stochastic parrot to true generative AI spaces.

Rupert Lion (07:49.398)

Yeah, yeah, and that's interesting. And look, we're focusing in a little bit here on a subset, guess, Gen AI because it's kind of in the zeitgeist, it's very interesting. But I'd actually love to talk to you a little bit more broadly about the kind of, and again, it might be data science, it might be AI, it might be where they come together, but you've done a lot of work with larger organizations thinking about how to make sense of the vast amounts of data they can collect, analyze, and then kind of make decisions on.

Can you maybe talk us through some of the things that have innovated in that space over the last few years and what this is allowing you to do, which have kind of previously been unheard of?

David Ellison (08:28.238)

Well, I I know we want to get off generative AI talking about it all the time, at Lenovo, we do manufacturing and we manufacture servers. I'm in the server group. So the big data center computers. And there is an opportunity for generative AI to sell servers

Rupert Lion (08:33.299)

Hehehehehe

David Ellison (08:53.282)

auto configure for you. You don't have to set them up for you. The ones that self heal when something goes down, they self heal and they self defend themselves and some cyber security attacks because we're already seeing situations where, you know, where they're using generative of AI to perform the attack. Now we need generative of AI to defend from the attack. so, you know, we, we are seeing advances in the industry in my industry in particular, and across,

various other industries, I helped a wiring harness company do their production planning. And it saved them 20 % of their labor costs. mean, that's AI that's delivering value to the customers.

Rupert Lion (09:37.792)

Okay, so that's a good example. Maybe if we pause on that, then how does that come to fruition? Is that simply that the AI becomes able to kind of ingest so much information that it's just much more competent in delivering a kind of view as to how to be more efficient in its processes or manufacturing processes or whatever it might be than a human could be or than the existing platform. So what is it that's the secret source in creating these efficiencies?

David Ellison (10:05.098)

so I mean, the data is a key part, having the amount of data that you need. But this particular project was actually done in a small amount of data and data that can be housed

in Excel spreadsheets. But the thing is that you were, we were taking over a manual process, a process of someone sitting there saying what invoices are coming in and what skills do I need to fill them and just kind of guesstimating it. We took that guesstimation out of it and actually provided

real estimates of how things would take. And so now you can get a lot more accurate and granular in your planning.

Rupert Lion (10:39.518)

Right, okay, that makes sense. the other thing I wanted to ask you about, because I thought it sounded exciting, was the NASCAR project. I wonder if you can talk to a little bit about that, because that seemed quite fascinating.

David Ellison (10:52.482)

Yes, so we are partnering with Richard Childress Racing. They are a local here to North Carolina, where I'm based out of. And they're racing on the NASCAR circuit. And when you're racing your car, you want to put just enough fuel in it to get it to the next pit stop or to get to the finish line. Any more and you're waiting too long. And any less and you don't get there. So it's very, you're threading a needle

The current process for determining how much fuel, now remind you, there's no fuel gauges on a NASCAR. There's no fuel gauge. No, that's extra weight. That's extra weight that you don't need. So they only know how much fuel has gone in the car by weighing the cans. They have these cans they fill up the gas tank with. And so they inject these in. What they were doing was counting one Mississippi, two Mississippi, three Mississippi.

Rupert Lion (11:29.024)

there's not? Okay, I didn't realize that. That's good to know. I won't be buying one of those then.

David Ellison (11:52.186)

So what we did is we added a camera that was observing the person and recording not only the time that it is attached for, but also the angle which attached to it and able to calculate the flow rate and tell them exactly when they've got enough fuel in the car. This allows them to pull forward and to gain three or four positions every pit stop. That's a huge advantage in a race.

Rupert Lion (12:18.38)

Yeah, that is huge. I'm sort of a bit surprised that it's even got to this stage in the world that they're still doing it manually, counting one Mississippi, two Mississippi. mean, but good to see that that's making a difference. Do think there's other applications like that, are, I guess, industries or environments where it's still quite basic and quite manual, where really you could just throw in something that's

that's GenAI -based or something like that, which could just basically shortcut these simple tasks and processes. Are there any other examples you've come across recently of where that might be the case?

David Ellison (12:58.966)

Absolutely. I have another example right off that we did just a few weeks ago. And this is an island conservation project. This is in Robinson Crusoe Island off the coast of Chile. And they have invasive species called the Coati They call it the South American raccoon. It looks like a fox to me. Anyway, it's destroying the environment because it's reproducing and outcompeting all the native species. So they set up camera traps all over the island.

Rupert Lion (13:11.778)

Mm -hmm.

Rupert Lion (13:18.808)

Mm -hmm.



David Ellison (13:28.25)

and we're having a ranger sit in a bunker and just like look through these images all week and to find out where these Coati were. So we were able to take that manual process and convert it into, so that took 30 hours a week. And we were able to turn this on, it takes two minutes on a GPU, an automated process in two minutes. So now that ranger can get out there and get actual work done instead of sitting in

sitting in a hut somewhere going through images. you know, these are, there's so many opportunities out there where the application of AI over a manual or a baseline can really improve the environment or the business situation that you're in.

Rupert Lion (14:16.674)

Yeah. And do you think, I mean, there's obviously concerns out there that it takes away jobs from real humans and all these sorts of things. And you probably saw recently, actually, I thought it was quite fascinating and they backtracked on it, but Lattice were talking about giving AI agents the same sort of status as working humans. And then there was kind of backlash and it kind of went back from it. So it's obviously a hot topic around like, you know, are these AI agents there to take jobs, supplement jobs, create new jobs? You know, what's your take on that?

David Ellison (14:46.266)

I think AI will be a part of everybody's job. think customer service, it's not going to replace customer service, it's going to enhance it. We're going to expect, just like we expect when we search on the internet, results to come back instantly. We didn't expect that 20 years ago. We didn't expect instantaneous results. We didn't expect Google Maps to tell us exactly where to go. We had all these problems.

AI is enabling us to deliver better solutions faster. But that doesn't mean you fire people. It means that you're able to employ them, not doing the routine mundane stuff, but doing the innovative and creative stuff

Rupert Lion (15:30.136)

Yeah, but isn't that also the point though? I saw an excellent kind of meme or something, which was someone saying, look, know, I want AI to do the dishes and the laundries for me so I can indulge in painting masterpieces. I don't want AI to paint masterpieces so that I can then go and do the dishes. And that is a concern that people have, right? And it's a valid concern. Like, yes, AI can do the kind of the base automation of manual.

some manual tasks, not so many physical manual tasks, but also it's being touted as being able to be this generative super creator as well, where it can create, where it can do the creative stuff we might want humans to do that's more, that we deem as more high value. So it strikes me that in the last few months or years, actually AI has been able to go across all of those areas, which is, think, why people are now more concerned for it in the job market. Do you see my point?

David Ellison (16:27.31)

Yes. You know, I think personally, the way I've been using AI is, you know, I would produce content for LinkedIn, but it was slow and I'd probably post like once or twice a week, maybe. But with using generative AI tools, now I'm able to post every day. So that's that that increase of level of service, that increase of output that you're able to get AI. Now that that didn't eliminate my job. I haven't automated it away.

but I'm able to do more now with less time. There will be, and let's be honest, there will be some jobs that get automated away, but there are so many other jobs that will be enhanced. the statement that you, the joke that you probably heard is AI won't take your job, but somebody using AI will take your job. You've probably heard that joke before. I definitely believe in that.

Rupert Lion (17:23.222)

Yeah, well, that's an interesting one because that takes me onto another topic that I'm fascinated in, is how are people going to learn to work with AI? So I've noticed already there

are piles of courses at colleges around the world that are sort of AI oriented courses a myriad of different ways. But the reality is it's not just AI courses. It's now going to be if you go and do a chemical engineering degree

That should have how to work with AI in chemical engineering embedded into the degree. And I'm really curious how that's going to happen, because if you think about most of the people who designing those courses, they are chemical engineering professors who are in their late 50s or whatever it might be, right? Like, so they're not going to be leading on the AI front of supporting that. So I'm curious to see how we're going to blend those worlds so that people learning to do all of the different skill sets that are required of

well -functioning world can have AI integrated into them from the days of them learning those things at college, et cetera. I mean, have you seen anything around happening around that? you got any observations on that at all?

David Ellison (18:30.218)

Well, given this statement is coming from someone with a PhD, I don't think schools can teach you at the rate that they need to be teaching, the rate that things are developing. A school can't teach you, a curriculum can't teach you. You have to take a charge and teach yourself. Now that, so when you're talking about a school curriculum, is a school curriculum going to be strong enough? I think the school curriculum gives you the foundations and the

But you have to learn it yourself because anything they teach you is going to be outdated in six months. I mean, just look at the explosion that we've had in the last six months, two years. What I'm doing in AI, even though I studied AI in my PhD and undergraduate, all of that's out of date. All of that's gone now. Unless you are constantly going to school, the best way to go to school is to teach yourself.

Rupert Lion (19:23.768)

Yeah, and I wonder, maybe this just changes the nature of our higher education model, right? It just changes the way in which people learn for vocational reasons, right? Maybe there's a different model. there is. Instead of just a four -year college degree, you pay for or it becomes accepted that you do a 10 -year kind of course or not even a course, like a connection point with a college, such that you're constantly

uploaded with interesting kind of renovations on the topic of whatever your initial major was, for example. But I guess that's it. mean, we'll see on that. But I think that's interesting because for the workforce to be able to take advantage of AI, they have to understand how to work with it.

David Ellison (20:08.826)

Key key to this is an education that teaches you stuff is not very valuable. An education should teach you how to learn. Like the purpose of a PhD is not to become an expert in a particular topic. It's to learn how to learn. And we're going to need those skills. You know, you don't need a PhD to the plenty of smart people that don't even graduate college. Just go

Learn how to learn and you will be valuable in whatever job you do and you'll be able to keep up with AI. Learn how to learn

Rupert Lion (20:42.092)

Yeah. Okay, that's interesting. So I'm going to change topic for a moment because I do want to get onto this point around the kind of ethics because this is always again, a bit of a hot topic. I know that you were responsible for setting up that kind of that ethical AI committee at Lenovo. Can you talk us through a little bit about A kind of why you did that and B your perspectives on why it's important?

David Ellison (21:04.41)

Yes, absolutely. So what was happening at Lenovo was I was making all the decisions about what AI was considered reasonable and what consider what AI is considered ethical. And it was just me in a room making the decision like I'm some sort of dictator, you know,

all knowing dictator, right? Like it was was it was there. I immediately said, you know, this is not the way this decision needs to be made. This needs to be a committee of people with diverse

with diverse experiences, some experts in AI, some not experts in AI, because you want that diversity of opinion and diversity of backgrounds that are making these decisions on what is ethical, what is diverse, what is responsible. And so that's why we formed the committee. And now we've got about 20 to 30 people that sit on the committee that review all internal and external projects at Lenovo

Rupert Lion (21:59.468)

And where do you spend most of your time in that committee? What are the biggest ethical quandaries that you're dealing with?

David Ellison (22:06.01)

A lot with privacy. We have six pillars of responsible AI, diversity, inclusion, privacy and security, accountability and reliability, transparency, explainability and environmental and social impact. So, you know, we have all of those ones. Right now, we are spending a lot of time in privacy and security