EP. 37: AI MATURITY, ADVANCING FROM PRACTICE TO PERFORMANCE

AUDIO TRANSCRIPT

Saul Perlmutter [00:00:00] This is a very human endeavor and that we need highly trained humans, and we need creativity in how those humans are going to deploy the A.I.

Arnab Chakraborty [00:00:18] Hi I'm Arnab Chakraborty, senior managing director and North America Lead for Accenture Applied Intelligence Practice. I'm here today with Saul Perlmutter, Nobel laureate and professor at UC Berkeley and director of Berkeley Institute for Data Science. Saul, welcome to our podcast.

Saul Perlmutter [00:00:35] Thank you. Nice to be here.

Arnab Chakraborty [00:00:37] So, Saul, I think today we are going to talk about the art of the AI majority and how we are seeing the field of AI advancing within organizations really from practice to actually seeking high performance. And it'd be great to get your perspective from a scientific and an academy, a world in terms of the trends that you are seeing and how that could be applied in the in the organizational context. You know, for large Fortune 500 companies across across the globe. So just to just to give a little bit of recap for our audience and, you know, we came out with this iconic thought leadership around the art of AI majority. We basically surveyed about 1600 top executives across the world on from, fourteen hundred companies and basically try to understand which are the organizations which are really leading with AI in driving significant business impact. And what we found was that 12% of the companies were really at the end of where they were seeing significant business value coming because of the way they have deployed Ai, the way they are innovating, the way they are rotating their people and talent and all of that making a significant impact. However, what we also saw that 65% of the companies were still dabbling in their pilots and they were trying to build some of their capabilities but were finding it very difficult to scale their AI initiative. So, I wanted to kind of use that as a context because that means a lot of opportunity for the organizations to embrace AI and seeking significant transformation in their organization. And the secret sauce is to find what are the few things that they should be doing right and getting right so that they can be AI achievers in the next few years. So that with that backdrop Saul, I would love to kind of get your take, especially as you are, you know, in the field of academia, as you are teaching number of students and bringing the skilled talent into the workforce. You know, one of the big, big challenges with the AI is the adoption. And for the adoption of the AI, we need the talent you know within the organization to be ready to adopt the AI, to understand the language of data and analytics so that they can be able to bring it to their daily business. So, I would love to get your perspective in terms of, you know,

the ideas that you are deploying in the academic world inside UC Berkeley and North America. How do you see that those ideas being applicable even from an organization context and the business context, that people can actually apply that to create and uplift the talent and culture, to embrace data and analytics and the AI in the organization?

Saul Perlmutter [00:03:25] Well, it doesn't surprise me at all that actually it's such a challenge that you're describing for such a large fraction of the of the business community. And partly because I think that as soon as you start to think seriously about scaling up your data analytics, AI capacities, I think it reveals all of the weaknesses of how we often treat the data analytics part of our of our jobs. And I think that for many, many years, people have tended to think of it a little bit as a recipe book, as something where you can just hire some statisticians, you can get some data base experts and you know, and you're fine. But of course, what you end up with is people who know some of the specific techniques, and nowadays that includes some of the newer techniques of machine learning and AI. But you don't have a workforce that really understands the questions at some deeper level and recognizes how you need to deploy all these tools and for that matter, what counts as a good question, what are the things that you are actually trying to get at using these different... Now, some old some new tools put together. So, for me, I think it's a very good moment for me to step back and have a moment to think about what is it that is the skill is? And are we training our employees? Are we hiring people who can do this kind of thing? And in the university, are we teaching it and are we are we developing a whole new you know college aged students, but also deploying new fields and new teaching techniques so that we have a group of students who then can be employed and then an industry that they can be employing people who have some of these critical thinking skills that are so crucial. It is a sort of a cross between a critical thinking and a scientific thinking that you need to be able to make something useful out of all this. I will. You know, I think the immediate examples that come to mind have to do with things like the fact that you need to know whether the data that you're working with is relevant and is it appropriate to the questions that you're looking at. I mean, you need to understand how the categories that you've developed and the goals and concepts that you divided things up in, that you've parsed it in, are they something that's really going to be useful for the businesses that you're in or whatever the actions are that you're trying to do to decide about?

Arnab Chakraborty [00:06:01] Yeah. No, I think that is spot on Saul. You know, the aspect of critical thinking and using that across the entire value chain. Right From asking the right questions. Because if you don't know what the right questions are, you don't know what you're solving for using the power of data and analytics. So, it starts with framing the right questions to make sure you are focusing, you know, kind of outside in saying what I am trying to solve and then using critical thinking to actually think through the entire value chain of problem solving. I think one of the one of my reflections Saul and I would love to get your take on that is, when it comes to the field of data and analytics and you say that that you know you're going to have a statistician, you're cab have the data scientist and you know, you need the critical thinking skills where you can learn all of these skills. But the real, real, you know, moment is when you are actually applying it. And by learning, by doing is when you actually get the experience. And if you look analytically very agile, the field of AI is very agile, you have to quickly test, you have to learn, and then you have to improve, right? So, and it's an iterative process. So just from an academy perspective, you know, would you share a couple of things that you have introduced into your academy curriculum so that as you build the leaders of the future, how can they get that learning by doing practical experience in the field of data and analytics from the university so that when they come into the real world in the business, they are ready for that challenge?

Saul Perlmutter [00:07:27] Well, one of the approaches that we've taken in teaching some of these skills is stepping back and looking at what was it that as scientists we've learned to do over the years, that is just not part of most people's day to day culture. And I think that perhaps one the most important parts of that story are all of the ways that we've learned that we tend to fool ourselves. And so, we've been doing a lot of teaching just the ways that we fall into certain mental traps and analytical traps, therefore, that over the years we've started to develop little tricks of the trade to avoid. Now, some of these are, you know, as obvious as confirmation bias that you really need an approach that will help you ask, what am I? Where am I? Where am I going wrong? You know, not How do I know that I'm right? So, what would I look for as a signal that my particular assumptions are just mistaken so that I don't lead myself down a garden path of following everything that I think is reinforcing my current expectation. And it's something that people have done better and better, but they keep discovering new ways they can get it wrong. I'd say that with the data analytics becoming more and more complicated, there is a one very obvious one, which is that people now tend to look for the bugs in their computer analysis until they get a graph that looks like what they expected and then they stop looking for bugs and that you can now go back and look through the history of analysis and you can see that mistake occurring just in the way that the data has been plumped without respect to the error bars that it should it should bounce around with. So, we've learned over the years that now when you do an analysis of any sort, you should hide from yourself the consequence of the analysis while you're doing all the debugging and all the testing until you are comfortable that you've really checked everything out that you should have checked. Then you reveal to yourself what the answer is. And that's a tool that takes a little bit of practice and we've been teaching it, but it is something that I don't believe it's been adopted by almost anybody in the world outside of a few scientific fields. But it's very useful as a way to avoid that kind of confirmation bias that has become more and more easy to fall into in a world with complex data analysis. So, we look for these different new ways and old ways that we fool ourselves, and we try to develop different kinds of structures and approaches that help us avoid it next time. And sometimes they're as simple as having a good red team that will give your analysis a very, you know, a tough look and help you think about where am I going wrong? But sometimes it's some of these more sophisticated techniques.

Arnab Chakraborty [00:10:17] Yeah. No, I love that. I love that. And, you know, reminds me of the peer review mindset, you know, that came from the Academy Award, right? And how we actually use it today in the business world. Right? You know, where, you know, your peer is reading your work. It does give a different perspective. And that is so important, especially in the field of AI, because you are dealing with so many different stakeholders, you know, and, and I think that training is very, very critical just to have a different lens because you talk about confirmation bias and I think that's a that's such a great topic for us to delve in because when I think about AI Saul, and how we are using that in our business, in our daily life, just imagine how it has permitted in our daily life. And there is so much of it trust. When I look at my Apple Watch and all the things that it is telling me about my sleep patterns and everything, you know, I start believing it because now I trusted and I'm taking actions based on that, right? So now I think of it in the business world, we will make very important business decisions based on what the AI algorithms are saying. And trust, I think is the key word. And what we have seen is when we think about the AI achievers who are really excelling in the field of the AI is because they have created them, they have invested in building trust in their AI systems. You know, they have made sure that when they were designing the AI systems, they built the responsible AI principles into the whole algorithm, into the data, into the way the explainability of the algorithms, so that people can actually understand that it's not a black box, but it's a glass box that you know, that they can believe in, right? So maybe that's where I would like to pivot a little bit. Saul

to get your perspective in terms of what you are seeing. You know, you talked about confirmation bias being one of them, but what are you seeing are the risks with respect to A.I. when it comes to bias? You know, all kinds of bias and what are the opportunities as well that we see in front of us? Right. To manage these biases in a very responsible way. What is your take on that?

Saul Perlmutter [00:12:17] Well, I think the which it's fascinating to watch the newer A.I. elements coming into play, these machine learning techniques, you know, those who have been watching the various versions of, you know, chat GPT, GPT three, etc., I'm sure you're very impressed with what it can do, but also very aware of all the ways that it can take You right down some fictitious view of the world automatically, and I think these have this similar problem to them that you were describing, which is that they tend not to be clear about the source of their reasoning. So, they tend to be black boxes that will just give you something to work with. And so, what we need as humans to do is develop all of the structures to be able to set up techniques to check what is it offering us, which parts can we count on, which ones can we count on? And that I think you're absolutely right that you have to build that in very early into your use of these techniques or else they will leave you in these very strange positions where you'll get a strong recommendation of some kind or what looks like a result, and you'll just have very little confidence as to whether or not you should use it or not use it. And there's something very specific about the machine learning techniques that we've been using so far that I think leads into a bit of a danger zone that you were, I think you're referring to with respect to bias, which is that they are trained on things from the past. So, if we... Since we live in a dynamically changing world, it comes automatically with risks that you are biased everything towards what we saw previously, even if the world is actually changing. And so, if you find that you're in a world where there's new forms of well, in particular, if there's a new understanding of cultural biases and ways in which we've gone wrong in the past, that's not reflected at all in the training material that is available from the past. And so, we have to figure out ways to put that in now and not just count on a machine learning to have invented it, you know, from what was in previous works. So, I think that's actually a good example of it.

Arnab Chakraborty [00:14:44] Yeah. And I think I think you make a very good point there, you know, is that I think AI, I almost think of the AI algorithms that are coming out is like a copilot. You know, the human is actually in charge, you know, and the human is the real pilot. And then the AI algorithm is like a copilot, you know, giving the recommendations. But the human is in charge. So the responsible A.I. designs are something that the human actually, whether it's the engineer who is designing the code or whether it's the data scientist was building the model, you know, they need to have that process and governance in place so that the AI algorithm is operating in the way that we would expect it to operate. Because the opportunity is huge. Opportunity is huge. I mean, I was listening to World Economic Forum and what I heard of an example used to mention ChatGPT. It was one of the most talked about topic in World Economic Forum at Davos. And one of the one of the examples that was fascinating to hear about how ChatGPT it got created in November. The latest version, you know, it traveled all the way from West Coast to India, and one of the software developers in India actually used ChatGPT to provide, you know, government services to rural population of India so that a farmer can actually invoke the ChatGPT asking a question around services that he looking for. And it's not just, you know, asking for information, but, you know, it is actually the ChatGPT to be able to scout through all the government documents and provide the real recommendation that the farmers should actually be using, you know, all in a matter of few minutes. Right. And I think that is super powerful because now you've taken this technology in the West Coast that was invented traveling all around the world and now making it accessible to, you know, a farmer in a rural village. Right. Who has no clue about the technology right but is able to now use services, which was earlier

not possible. That's the huge you know, it's like when you talk about equality this is talking about how you can create equality, you know, using the power of technology. But then to adapt to this opportunity back to your point. Saul, how do we create those responsible systems from the very design principles, right? So that as we get into these kind of scale opportunities, right, we are not compromising on personal integrity and the data integrity and all the other obligations that we have as an organization.

Saul Perlmutter [00:17:10] I mean, I think that this brings up two different points. I mean, one is, is the idea that we need ways to be able to screen the kinds of recommendations that it's coming up with so that the rural farmer isn't getting the imaginary hallucinations of, hey, chat GPT along with all the good solid material. And so, I think that's going to be one of the next big jobs that we'll all be working on is figuring out how do you how do you drive chat GPT in a way that is responsible and is also effective? You know, that actually gets us the things that we want to learn and doesn't just follow some random thought that is, it turns out, just to be imaginary. And so that's one. And then and I think the other that is a fascinating element of all this is the fact that we think of this ChatGPT as maybe the cutting edge. But any time we start trying to automate systems, we have a different kind of responsibility that we're now starting to face, I think for the first time. And I think industry is starting to really think about, which is as soon as you start exposing thousands, hundreds of thousands, millions and billions of people to something, that's an automated system, Now you have responsibility to some real due diligence ahead of time and some monitoring while it's being used to make sure that you don't get unintended consequences of the automation. And, you know, I find myself immediately thinking about the fact that, you know, nobody designed I think the recommendation systems of the social media in order to create this very strong social polarization and political polarization that we're seeing all around the world. That was not the intention. And yet it seems like it’s a very effective way of polarizing populations. And you would want to be able to catch that and then figure out ways to modify the algorithms so that they don't create that kind of problem. I mean, another example from a few years back was the stock market crash situations that were caused just by automated trading. And once more, you would like to be able to stop and before you deploy these things and have some mechanism by which people can look together and decide how they're going to monitor and trust that you've set up, a reasonable automation.

Arnab Chakraborty [00:19:35] I love that. I love good examples and it gives me the analogy of the breaks in cars. You know, if we didn't have breaks in cars, we couldn't have moved at the speed at which we want to move, right? Because it gives us the confidence that we can navigate the car through the curves and uphills and downhill. And I think the responsible AI and the design principles in building AI systems in a safe and secure manner is exactly that, because it gives us the right guardrails to make sure that, you know, I think nothing goes off the off the rails. You know, when things are in high scale industrialized production with AI. Truly appreciate that. Truly appreciate that Saul. Maybe to kind of bring this discussion to a little bit of a conclusion here is I think the opportunities are galore and we have realized that the next 10 to 20 years are going to be the age of AI. I think this is... We are at a tipping point right now with everything that the world is seeing, the opportunities that we have in in leveraging A.I. in the wake of the economic recession that we are seeing, you know, in the wake of....There is a lot of uncertainty today in our world, because of geopolitics what is going on and how AI can actually help business leaders, managers to understand the different scenarios and make decisions more effectively. And more importantly, you know, what happened with all of us with the COVID experience is how can AI be at the heart of saving people, saving human life by building better medicines, better treatment, you know, that can save human lives. So, there is a lot of goodness out there in terms of the potential. I

think Saul maybe my question to you would be, what do you think the organizations that want to be the leaders of tomorrow using the power of AI, what are the three things would you advise them to think of that they should be doing immediately, right, so that they cannot just tap into the opportunity where they can sustain this, you know, and they can be the leaders of the tomorrow?

Saul Perlmutter [00:21:28] It's always hard to encapsulate all advice into, you know, a three-point plan, but let me give it a try. I think that maybe a starting point that I would say is that this is a very human endeavor and that we need highly trained humans, and we need creativity in how those humans are going to deploy the A.I. So maybe the very first place I'd begin is I'm trying to take advantage of this moment to do a lot of learning and that we should be learning both how to recruit, learning how to deploy and working. Ideally, I think one of the things that we offer in a university environment, and I can partner with industry is rapid prototyping, lots of experimentation and trying out different ways to train and different ways to run A.I. So, I think that those feel to me like a big starting point. It has to do with the humans and how the humans use the A.I., maybe the cautionary points that we've touched on. But I maybe I should just underline again is that we should be very careful to remember how the A.I. that we're particularly using is structured. Is it based purely on past information or is it doing something to get updated information because it is based on past information, then we might get locked into an understanding of how the world worked. Maybe before there was some climate change or maybe before there was some global economic pattern that changed that led to some recession. And we don't want to design around the past. And similarly, we don't want to design around past cultural mistakes that we've made where we're biases have worked their way in to our assumptions in the A.I., that now we can we can do better. So those that would be my second big point that we just that is a big cautionary note. But maybe my third thought on this is that even though these are both the first two are very challenging aspects of the story. I'm actually I'm actually rather optimistic. I think that we're living at a period where if we can do this next step, right, if we can really figure out how to turn this highly networked, growing, growing A.I. intelligent capability into an environment where humans can think together and figure things out together, then I think we've got a lot of room for a whole new growth spurt. And this one could be one that would be a good could make a planet we all are really enjoying living in because I think that we have now a lot of technologies that are hand that we just haven't figured out how to use right. And we all feel all the threats of the ways that we see things go wrong and be used wrong. But I think that there's no reason that we can't now find out ways to turn it into a tool that we learn together with and that we drive together and so that we can build a much more productive and much safer and more comfortable world for everybody.

Arnab Chakraborty [00:24:41] I love I love that theme Saul in terms of how we can make this a better planet, you know, all together right now, working with AI. And I think the human element is critical as you mentioned in your first point, the human element is really, really critical. And I think organizations are going to be investing in that space. You know, whether it's about their talent DNA, it's about their cultural DNA and how they are elevating the literacy and human of data and AI within the organization, across the levels I think is going to make the difference between who are the leaders and who are the laggards. And I think that's really the...it's always easy. And, you know, sometimes people think that training is an easy topic. It's not an easy topic, it's a very creative topic. We can't just be on a mode of doing tick boxes. Okay, I did so many trainings now I'm AI literate, no it’s not about that. There's so many different elements that go into it and you know, you probably know it the best. You know given you know a score of how you design the curriculum in the academia. But I think our leading organizations have to set up their own AI curriculums. You know, that is there to train their boards, their CEOs, you know, their managers, their analysts, you know, and maybe

even their, you know, business you know, sort of value chain partners, you know, suppliers, customers. So, I think that investment is going to be very critical, and organizations cannot do that alone. So, one of the things I would like to add to your top three Saul is leading organizations who can actually partner with the ecosystem that brings in the academy universities in the fold, that actually brings, you know, other technology platforms and service providers into the fold so that they do it together. I think, those are the organizations that will leapfrog in this journey because this is not a journey to be done alone, this is a journey to be done together. And I think together we can be much better in making that impact and winning together.

Saul Perlmutter [00:26:41] I was just going to add that I think this is a real opportunity on both sides. I think it's one of these times in which a partnering of academic and industry worlds, I think could make a huge difference because they both have a way to pull the story forward. But I think they could do it much more effectively working together in this.

Arnab Chakraborty [00:27:03] So Saul I think we have come to our end of this podcast. I think it was a fascinating discussion with you, as always. You know, we touched upon multiple themes, right, from talent, culture, DNA. You know, we talked about responsible design of AI systems. We talked about, you know, what should the organizations be doing? What are the actionable steps they should be taking? So, a lot of great teams Saul that you and I discussed here today. And I would just encourage everybody listening to this podcast to post your comments and suggestions and feel free to reach out to Saul and myself for any follow ups if you would like to have. So, Saul with that, thank you so much and really appreciate you making time for this podcast.

Saul Perlmutter [00:27:42] Yeah. It's a pleasure. Nice to talk, as always, Arnab.