



# AI Ignition

## Ignite your AI curiosity with Jana Eggers

### How will the job market change with the evolution of AI?

**Intro:** From Deloitte's AI Institute, this is AI Ignition, a monthly chat about the human side of artificial intelligence with your host, Beena Ammanath. We will take a deep dive into the past, present, and future of AI, machine learning, neural networks, and other cutting-edge technologies. Here's your host, Beena.

**Beena Ammanath (Beena):** Hello, my name is Beena Ammanath. I am the executive director of the Deloitte AI Institute. On today's AI Ignition show, we have Jana Eggers, CEO of Nara Logics, an AI-based neuroscience company, joining us today. Jana, thank you so much for being on the show. Tell me what does a day in the life of Jana look like nowadays?

**Jana Eggers (Jana):** Beena, thanks for asking me, and this is one of my joyful parts of my day when I get to catch up with folks that I've known for a long time in the industry and share what's going on between us. It's always so nice to talk to someone who's also going through this journey and sharing what we're each seeing, so thank you for that. A day is—I've been on customer calls almost all morning, so learning what's going on with our customers and moving projects. One this morning was a project kickoff; another one was we were showing some results, and before that I was actually talking with someone about a contract. So, it's every stage, prospects, and all the way through to delivering projects and then later this afternoon, I have a call with a customer who is taking our software and implementing something new. So I feel like today actually is a really good example of living through the entire software development lifecycle itself.

**Beena:** Yeah, and I know you've had such a fascinating career and background. I know you're a math nerd, a geek, but you chose a business path. Can you share a little bit about your journey to getting to the CEO of Nara Logics?

**Jana:** Sure, so what's been fun for me is honestly while it doesn't look like it, I've really had the same career or job, not role specifically, but what I love is new technology, and it's bringing new technology and ideas out there to people who don't understand them yet or are trying them and trying to see how they fit within their business. So I am a mathematician by training. Out of school, I went out to Los Alamos and did some work out there using AI. So 30 years ago I was doing some of the same things that I'm doing now. It's just that now the future is spread out more broadly, and so it's really been a journey, but it's always been focused on how do we take technology and make it useful and accessible to people. Again, some of that journey is everything from search engines. I started working in search engines at

Lycos in 1996, and so in there we were using AI techniques, we were using natural language processing, so for me it's always been that, some people will say bleeding edge, and sometimes it does feel that way, but that leading edge of technology. And you asked about Nara Logics, and I think that's a key part of what's really leading edge there, because certainly AI has been around, as I mentioned, for 30 years, but the leading edge for us at Nara Logics and what we're focused on is explainability, so that's a big piece of what is important to us in that leading edge of how do we get to true explainability to understand what the machine sees differently from what the humans may see.

**Beena:** Yeah, so tell me more because explainability is such a big debate discussion topic. Tell me more about what you mean by explainability and why is it important for companies to understand?

**Jana:** That's such a great question, and I'll be honest, I'm constantly learning every day from our customers as they talk about it, and I'll relate back to when the customers I was just talking to. The customer was really looking at patterns of things, of course, and so as we talk about explainability, we're less talking about, tell me why the computer made that prediction and more talking about, explain to me what this pattern is or is made up of, so that I can start really more in human terms, which often are conceptual, understand what that pattern means beyond just I have these, let's just say digits, these digits that give me a pattern, that doesn't tell me a lot. How can I really understand better? And so as we were talking about it, I said explainability in your case may less be, tell me why the computer got there, and more, help me understand in human terms what these patterns mean and how they are similar to each other and how they're not. So, if you think about clusters, we're often looking for that centroid, but what we really want to do is, how do I explain why that group of things kind of groups together and not smoothing it out too much with that definition of the centroid, if you will.

**Beena:** It is true that explainability is itself misunderstood in certain ways. So being able to understand the core data and how it's being used, plus explaining how the algorithm made the decision, I think it is such an important topic and there is no easy solution to it. Changing gears a little bit, you've worked across several industries, you've worked across several use cases, you were using AI when it was probably not even called AI, so how do you see the applications of AI as it's broadened out, which industries do you see using most AI and where do you find the most unique use cases?

**Jana:** That's hard to say, because I see uniqueness happening every day all the time. As I mentioned, I was talking to customers, not the one just before this, but the one before that, and they're looking at part failures and how they can understand better and predict better when a part is going to fail, but a lot of that depends on how the equipment is used and where the equipment is used, so you can't just generally, globally, go in and say, well this part is going to fail then. It really is a lot of context to not just the part or the machine, but to who's taking care of it, to how it's being used, so there's a lot of times with that context. Again, it goes a bit with that clustering that I talked about, when we try and smooth things out, we actually take away a lot of that important granularity, but we do that because machines will overfit too, if we have too much granularity. So there's this real balance between giving enough context and the trade-off of context, making it too specific that everything special, and that's literally the conversation that we had with this customer of the balance between everybody's special, because they're all unique in their situations and in that equipment, and being able to see things and patterns across different people and their contexts.

**Beena:** It reminds me of an example, this was for predicting when a jet engine might fail. As we started looking at the data to be able to predict jet engine failure so that you could prevent unplanned downtime or flight delays, what we saw is you could actually see how the pilot was flying, did he hit the thrust hard, which caused more deterioration, which resulted in unplanned downtime or failures, so

having the full context, but you also discover additional things once you start going into the data, and knowing what to do with that becomes really crucial. Context is so important, and I think a lot of time it gets lost in the hype of, we just need massive amounts of data, but you and I both know, you also need all that domain knowledge, all the industrial, the core knowledge to really get the most useful models that can impact your business. I love that example, because I've just seen it play out in so many different ways.

**Jana:** Your example, I would jump in there, because this is a conversation, your example reminds me of another one in health care and one of our health care customers, and we were not looking for this at all, but because part of it was understanding doctors' notes and context that those notes gave. And one of the things that we ended up noticing is that doctors that were trained at certain institutions took notes the same way, it makes perfect sense, but that wasn't something that was called out to us, it was something that we noticed as context to part of a problem that we were trying to solve, so it's exactly, when you said how the pilot flew the plane, how the doctor took notes, and there's all kinds of things like that that do have an impact, because knowing that that doctor is not—may take notes in this way and another doctor in another way, allows you to bring in common elements while not ignoring the differences too.

**Beena:** That's true. Speaking of notes, the thing that I remember is that now most of them are entering their notes into computer systems, but a few years ago when we were trying to build the AI model, staying with the jet engine theme, there were service records, which were paper forms and all handwritten notes. Now think about technology that can decipher these handwritings and then be able to extract the right information to provide context, it gets messy, so that's why so much challenge around AI happens to be in the data phase, whether it's messy data, bad quality data.

**Jana:** Yeah, and you have a problem cleaning that too. And this is something that I often talk to our customers about because many customers that come to us and say, "Well, one of the first problems I want you to solve is cleaning my data," and I always say, "Sure, we can go through and do that, but then you're going to lose those patterns." Because the patterns are messy and this isn't really, I always get very nervous about, well, then what are you going to do with clean data? Because that's not how the world is, the world actually doesn't work in that clean data mindset. So, that's one of those things, and I think we've talked about this in the past, where it's like, that's one of those things that I get very nervous about when people talk about, well, cleaning data is one of the most important things that we do for AI and ML. I don't think so, and I'm very nervous about any clean data projects.

**Beena:** That's interesting, Jana, because then what do you think about the whole rise in synthetic data? Do you think that's going to remove some of the detailed context that might be needed or what are your thoughts on synthetic data?

**Jana:** I actually think there's a huge opportunity in synthetic data. So I'm really excited about that field, but I also think people need to know what they're using it for. So if it really is to understand the breadth of what could happen, that's great, because people are always going to use things in new and different ways and that's that breadth that we don't necessarily have the past examples of. And so I think synthetic data can give us that, but it's us understanding that and us also understanding that the synthetic data, while it may give us the breadth, it may also have a lot on those edge cases that aren't really important, and we need to learn how to balance that out. So, it may expose something that we need to know about, but then we also need to figure out how much we need to worry about that. So I think it's a great thing, and I'm actually really excited about some of the work that's going on with GANs

to create synthetic data, but I also want to make sure that people know and understand what are good uses, and talk about what are good uses for it and what aren't good uses for it.

**Beena:** Right. Going back to explainability, there's also this notion that if we cannot figure out explainability, AI will not progress as much as it should. What are your thoughts on that? Do you think explainability might actually slow down AI's growth?

**Jana:** No, I think, honestly that a lot of people use that explainability excuse as a cop-out. They just don't want to think about it. I often use a quote that was given, and this was talking in the health care sense where an engineer said, "Sure, we could probably explain why these decisions were made, but I probably should dust under my bed, but I don't." And this was in health care. I specifically said this was health care because it's a quote in a news article and I show that example to executives, and I said, "This isn't about whether or not we can explain, this is about whether we value an explanation." And it's really up to, in my opinion, leadership and I don't just mean executives, I really mean leadership across a product perspective, to value that and to understand when they need to value it more than others. I think when you see sometimes those very stark words, it makes people think like, whoa, what would my organization be saying that about? Where would my organization say I should dust under my bed and I don't?

**Beena:** I think there are nuances to it, right? Just like context, explainability might be super important for certain use cases for certain industries, and there might be use cases where you don't really need to understand in-depth, right, depending on whether it's mission critical or life critical. Do you think explainability applies broadly across everywhere that AI is used or does it depend on the kind of outcome that's being driven by using AI?

**Jana:** I do think it's clearly more important than we've treated it, but it comes up more. I'll give you an example, my first job out of research was with a logistics company and we did, among other things, driver-load assignment, meaning which driver should take this load of freight and you can say, hey, that's not absolutely critical and a machine can make that and it'll be close enough to right, and we have the statistics to say that, in general, we could make a better decision than the human. But there's often context that isn't in the machine and that human beings are able to, and we did allow this with our software and this is back in the mid-90s, we allowed the human that was using this and accepting the match that we made or not, we allowed them to compare what they thought might be a better example, and then showed them how those two compared. And that, you could make an argument that that wasn't critical. We knew the machine was good enough and overall it was going to be better. That said, there were times that it wasn't going to be better and if we could use this as augmenting technology, rather than thinking of it as replacing technology, and that's really how we approached it. So that's where I'd say, yeah, in some senses, absolutely the criticality of an explanation is more important in some areas, but I think for adoption as well as for taking care of more cases, if you look at even in places where a machine does better at reading a radiology film, for example, actually usually where the machines and humans miss are different, and so that complementary approach I think is really benefited by explainability.

**Beena:** Yeah, so true. I remember we did this AI solution for a manufacturing plant. It was able to predict a particular plant factory floor machine when it would fail up to 99.999% accuracy, much better than humans, and we deployed it onto the factory floor and none of them would use it. So at that point it became a failed project because we were not getting any feedback, the factory floor worker was not using it, and that was because they didn't understand what was going on. They trusted their gut instinct, having worked in that job for a long time. They trusted their gut instinct rather than a software telling

them this machine is getting overheated, you need to turn it off now before it fails in the next 10 hours. So I think there are cases where, like you rightfully said, being able to explain why is it coming up with the decision, trusting the user to be able to understand, and then actually work better with the machine, actually is a win-win on both sides. Great point, Jana. Jana, what do you think, are there industries that will not be impacted by AI? We see it being used across everything, right, from education to agriculture and everything in between. Where do you think AI will not have an impact?

**Jana:** I'm a big believer in that so much of what we do relies on data of any sort and bringing together—AI is all about bringing together data. And I'm sitting here staring at some folks doing construction there. I think there—anything from schedules, to make schedules more robust, I mean, anybody that's done a construction project knows that it rains one day and that has a big impact on schedules. Us being able to kind of do better at predicting that and helping people schedule is really going to save everybody time because someone, a small business who's doing the dry wall hanging, gets impacted because somebody else's schedule gets out of whack and how do we help that be more efficient across the board. And so it doesn't mean that there's going to be robots doing dry wall hanging, which I think is what people often think of. It means that we can use data better to actually make them more efficient and more effective, and that's more of how I think of it.

**Beena:** Yeah, you and I are both AI optimists and believe in AI being more of augmented intelligence and it's about humans and machines working together to make the most progress. Do you think, and there's obviously a lot of discussions around future of work, how jobs are going to be displaced, and I think new jobs will evolve as well, but you touched on something very interesting on the drywall example. How do you think jobs will get impacted, and maybe you can speak in the context of software engineering, what does a software engineer's job or a software developer's job, how does it look like 10 years from now, 15 years from now?

**Jana:** I think we've really done a disservice to the industry in that we've almost created some new roles, like an AI engineer, and I very much talk with our customers about training your software developers to be AI. They don't need a PhD. Very few companies need someone with a PhD in AI. I mean, maybe one or two, and this is nothing against people with PhDs in AI, because I love them, and a lot of my career is spent with them, but you don't need as many of those because most companies are not doing AI research. They're really applying AI and great software developers, even merely good software developers, can apply AI and actually they're oftentimes even better than an AI engineer or someone with an AI PhD because they understand the full system. And one of the ways that I describe it to people is, we used to say software is eating the world and then people changed that to AI is eating the world. I actually think software is fed by AI. So, software is still eating the world, but it's being fed by AI, and then AI is fed by data, but data is fed by your organization. So you really have this, I call it the software wow food chain, because your software can deliver, wow, and that's what motivates and excites your organization, and then they're the ones that have a huge impact on your data. So, there's a cycle there that I think is really exciting for us, and when you talk about jobs and jobs impacted, I think more of us are going to become more data aware, and that doesn't mean that there aren't some specialists, just like you have an AI engineer. I just think we'll probably need fewer of them than most people think. We also will probably need fewer data scientists because more of us will start understanding and impacting data, and again, that's nothing against those roles because I think those are really exciting roles and necessary, but it will more seep out into every role somewhat.

**Beena:** Yeah, I completely agree. And that's why AI literacy, data literacy is so important for every employee in the enterprise. What do you think will be the most in-demand job 10 years from now?

**Jana:** What I hope will be the most in-demand job is really product managers. The role of a product manager is really to look across all the different roles that are bringing a product together, so AI is incorporated as I talked about my technology or software value chain. I hope we go that way. I don't think we've valued that perspective enough and that kind of glue that can bring things together and understand, oh, wow, when the data's going this way, we need software engineering to push that way or even things like, an example I give is, we often get very excited about the technology we know. So, a quick example was some folks that were working on saving beehives, and initially one of the ways of helping to save these is murder hornets come and attack the beehive. So, how can you tell when a murder hornet is coming? Well, the team that initially started working on it did visual recognition and then someone, because they knew the hornets a little bit better, a subject matter expert, said that vision is really hard because the perspective and how murder hornets really have a certain way of sounding and so they switched from doing video detection to doing sound detection and really increased their ability, and that's what I mean by we get a little obsessed with the technology that we know. So if I know how to do video detection or image detection, I often go so far down that path and I think that product management, that's their role is to pull us back and go, wait a second, we're getting a little too heavy on this side. That was an example of technology, but sometimes it's data and sometimes it's the user experience. There's all of these things, and so that's where I hope that we put more value, but that's not to devalue any other, it's to raise one.

**Beena:** I think the role of the product manager is not just from an IT or software lens, right? No matter which industry you're in, having that core domain knowledge or subject matter expertise, and then identifying the experts to bring in, and whether you use AI or another technology, but to solve for a business problem. I hear you. I think that combination and focusing more on what you want to build and how, rather than focusing after specific technologies, will be the most efficient way and I think we'll really get there soon. We are seeing a lot of traction in this space. So, Jana, you work across all these industries and different customers. We've seen large companies, most of them have started their AI journey and some of them are very well advanced, where they have AI infused throughout their organization. What would your advice be to CEOs or the C-suite and board members of companies that have just started their AI journey and who have just started looking at PoCs and getting a few things into production. What's your advice to beginners?

**Jana:** My first advice is always don't treat it like an ivory tower. We did this a long time with software, and I think we got better, and I believe we have regressed a bit with AI in that we often treat it as that specialty and kind of put it off in its own corner. So that's the first one. While you need some expertise there, incorporate that expertise rather than sending it off in its own area. The second one that I talk about with people a lot is the explainability and understanding that explainability isn't just about bias, although that's a really big and important reason for it, but it has this augmentation, it has this usability point that I think is really critical, and it also is a good checkpoint to make sure that what you developed is in lines and representative with the values of your organization. So, it kind of goes back, you were talking about the what and the how, but I think that explainability can help you with the why, why are we doing this and are we accomplishing that why. So, those are, don't separate the people, make this a diverse and integrated team, and then secondly, the explainability, and then the last one that I will say is your data silos are killing you. So, almost every customer that we work with, their data is ridiculously siloed and people are incredibly entrenched in their fiefdoms. I mean, it's been just amazing how many times we have seen play out on a call with us on the phone where someone says, "Well, if you who has another person in their organization just in a different group want that data, you are going to have to go up to the CEO and get them to approve and then have them come down to my boss and tell me that I am doing it because you are not getting it otherwise." I got to sit there and say, "Isn't it the company's

data and not your data?" But I will say that there are way more silos than most executives, particularly of a global scale, realize because they most often tell me, "But we have a data warehouse that has that," and I will say, "Yeah you do and you see that rollup, but the person over here doesn't see that rollup and actually doesn't even know oftentimes that their data does go up to that." So, them helping us understand better the data and where that comes from because we are often really going to the source for that reason that I said, we don't want the smoothing that happens that goes to a data warehouse, that's the kind of reason why we get into that discussion and where I am very shocked on a regular basis that how, as I say, they don't really have walls, they have fortified armed barriers between groups.

**Beena:** I remember having very similar conversations 20 years ago when business intelligence or BI was taking off, data warehousing. There is this whole debate on why do you need a separate data environment or why do you need to bring data out of transactional systems into a snowflake model, for example. The intent of using that data was different. It was to do, early on, business intelligence work, and we see that same happening in the AI space as well, getting past those data silos is the first step. What about CEOs and boards of companies that are a bit more advanced? They are using AI in their core products and functions. What should they watch out for in the next 5 to 10 years? What would your advice be?

**Jana:** I think that most of them, even if they are advanced, they haven't really figured out how to operationalize it. So, they may be using some advanced models, but they haven't put that in their cycle. In software development, we talk about CICD. So, continuous integration, continuous deployment, and most of AI that I have seen isn't in that yet. I think that's one of the things that they need to understand what that means in terms of constant model building, how many models, how do we do model management. There are going to be some similarities but some differences, and these are going to be business decisions, they are not just IT, like my ops guys and gals don't just do that. So, that's one. The second one is security. People ask me all the time, if you weren't in AI, where would you be? I would probably be in security, for one, because it's just nerdy and they are doing lots of cool stuff. But I do think security has a bigger and changing role in this as we become more dependent on data. So, I think there will be a lot going on there that they need to be more accurate. The reason I particularly say that is great security people are really about how do I enable safely, but there are still a lot of security that's very much defensive strategy and that blocks us. So, upping your security game such that security is living along with you and really playing that enabling role rather than that blocking role, that's where I think there is going to be some really exciting work to do when you talk about 5 to 10 years out.

**Beena:** What is an AI solution or a problem that AI is going to solve or hope that it solves that you are most excited about or that you are looking forward to in the broadest context possible.

**Jana:** Well, personally, I am excited about AI finally solving calendaring because my calendar is a disaster and just the amount of emails and effort and work that goes into just finding a time for you and I to talk, which I love all the time, is just such a time sink and it's not an easy problem. If it were easy, clearly it would have been solved before. There is a lot of context and nuance and personal pieces to a calendar. So personally, I believe that we will get there. Worldwide, obviously, we need some very dramatic actions on things like climate and health care, as well as logistics. I think there are some big chunks like that that I am excited that AI will, and I know it will, have an impact there. All of that said, I always tell people, I really like what people consider boring problems. I will give you an example. I was at a conference and speaking there and someone came up to me afterwards and said thank you for this. She said, "I really appreciated that you said make AI boring again," and I said, "Why?" and she said, "Well, because I work in AI, but people are often disappointed when I tell them what my major project was last year, which was reorganizing the call list to call people for hospital appointments." And she said, "Their

goal was to prioritize calling the people that were going to miss appointments,” and they had a huge impact on missed appointments. This was in the UK, this was saving millions of pounds a year, but not only saving that, but also imagine all of us when we go in and it's backlogged because someone showed up late and they did that, so fixing that kind of thing. She said, “My family thinks like, really you are doing AI and all you are doing is reorganizing the call list?” And I'm like that is such a beautiful example of a place that, as we were talking about, you don't even have to change anyone. You are giving someone a list that was calling a list before, they are not changing anything they are doing. And now without doing that, I have just saved millions of pounds, but more I have made doctors, technicians, nurses more efficient so they can focus on other things, and that to me is just beautiful. I mean, I mentioned the construction problem, it's the same kind of thing, can we use AI to make things more efficient, not just because I want everybody working every second, but because we know that this impacts that and that efficiency really makes all of our days go more smoothly, and hopefully I have more time to have great meetings like this.

**Beena:** Love it, Jana, make AI boring again. So, Jana, for people who want to stay in touch with you, stay connected with you, what's the best way? Where can they follow you? Are you on social media?

**Jana:** I am. I need to be more on LinkedIn, so I apologize if you go there and find me, I am very happy to connect with you and thank you for that, but I am not very active there. I am more active on Twitter. So, I am @Jeggars, and then you can always email me, jana@naralogics.com, and I am always happy to chat, I love hearing things like that. We reorganize the call list for missed appointments, I love those stories. I regularly, when I can, not always, but I do regularly get on the phone with people who say, “Hey, we have been trying this AI project,” even if it's not something that we as a company would do, I get on the phone and talk with people because it's a great way of us learning what else is going on in the industry. So, it's not unusual for me to get on at least a quick call and someone says, “Hey, we are trying this, and we are having trouble here. Do you have any ideas?” and happy to share thoughts because I have been doing this for a while.

**Beena:** Thank you, Jana. This was a great conversation. So, let's see if we can make AI boring again.

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