SDS PODCAST EPISODE 751: HOW TO FOUND AND FUND YOUR OWN A.I. STARTUP, WITH DR. RASMUS ROTHE

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Jon Krohn: 00:00:00 This is episode number 751 with Dr. Rasmus Rothe, co-founder of Merantix. Today's episode is brought to you by Oracle NetSuite business software, by QuickChat customized AI assistants, and by Prophets of AI, the leading agency for AI experts.

00:00:20 Welcome to the Super Data Science podcast, the most listened-to podcast in the data science industry. Each week, we bring you inspiring people and ideas to help you build a successful career in data science. I'm your host, Jon Krohn. Thanks for joining me today. And now, let's make the complex simple.

00:00:51 Welcome back to the Super Data Science podcast. Today, I'm joined by the AI mega entrepreneur, Dr. Rasmus Rothe. Rasmus is a co-founder of Merantix, the comprehensive ecosystem that finances, incubates and scales AI companies, transforming existing industries and spawning new ones. Merantix includes a venture studio that builds transformative AI startups from the founding team up. It also includes a venture capital fund that invests in AI startups. It has Merantix Momentum, a consulting partner for AI development and operation, and the Merantix AI Campus, a slick physical location in Berlin that is Europe's largest AI co-working hub. It houses over a thousand entrepreneurs, researchers, investors, and policymakers. And you may recall, if you've been listening to this show a lot, that a couple of months ago, I recorded a few episodes there. All right, so in addition to Merantix, Rasmus has done other things as well. He co-founded and co-leads the German AI Association, a role that has him regularly providing policy guidance to Europe's top politicians.

00:01:52 He scaled to 150 million users a deep learning powered service that analyzes faces and he studied computer science at Oxford, at Princeton and ETH Zurich, culminating in a PhD in Machine Vision. Today's episode

will be of great interest to anyone interested in commercializing and scaling AI. In this episode, Rasmus details what makes a great AI entrepreneur, how to best raise capital for your own AI company, how to ensure your AI company is well defended from competitors and what the future of work could look like in the coming decades as AI and robotics overhaul industry after industry. All right, you ready for this phenomenal episode? Let's go.

00:02:36 Rasmus, welcome to the Super Data Science podcast. It's awesome to have you on here. Where are you calling in from?

Rasmus Rothe: 00:02:42 I'm calling in from Berlin. Great to be here, Jon.

Jon Krohn: 00:02:45 Of course, you're calling in from Berlin. We're going to talk about Berlin and Europe a fair bit in this episode, what you've been doing, specifically, with Merantix, your AI Campus. Very exciting. And I was recently there, so several recent episodes of the podcast were recorded live in Berlin, at the Merantix AI Campus, but I had so many interviews while I was there that I didn't get to interview you, and so we're doing this one remote. But we've known each other for a very long time, I guess, since around 2009 or 2010 would be about right. When did you start at Oxford?

Rasmus Rothe: 00:03:24 I started 2009, so definitely not before, and it must've been 2009, '10 when we were running The Entrepreneurs Club there, right? So-

Jon Krohn: 00:03:32 Yeah, exactly.

Rasmus Rothe: 00:03:34 Still the early days.

Jon Krohn: 00:03:34 The Oxford [inaudible 00:03:35] Entrepreneurs. Yeah. And it's amazing what you've been doing since, so doing a

PhD, where a project of yours took off at ETH Zurich, doing a deep learning PhD and having a machine vision application absolutely take off. If we have some time at the end of the episode, we'll talk about that a bit. And then eight years ago, which seems like a lifetime ago, in the AI space, you founded Merantix. So this is a Berlin-based AI ecosystem that builds and funds AI ventures but it also has a physical co-working campus. So that's where I was when I was in Berlin. It was my home away from home, and the atmosphere was incredible, dozens, hundreds of different companies and I mean, the total roster, I mean, several hundred people, I think it might be pushing a thousand people that are in your community. You probably know the numbers better than me. But just an amazing space to be, events, basically, every day, bringing the community together. I've never seen anything like it anywhere.

Rasmus Rothe: 00:04:41 Thanks. No, it was great having you, and I mean, you were also part of the community. You made it also awesome for a week. And I mean, hopefully, you come back and spend more time here, maybe record some more podcasts. I'm sure there's plenty more interesting people to interview there also on the campus. It's actually 100 different companies, 1,500 members, around 700 working desks and 250 events this year. So it's been pretty much one every working day. I mean, I even lost the overview of what's going on, so very active community.

Jon Krohn: 00:05:12 It's incredible. How did it all start? How did you get into creating a community like that?

Rasmus Rothe: 00:05:17 So as an incubator and investor in AI, we always had our own companies co-located. And at some point, we were looking for a new office and we wanted to keep the co-location of our companies because we saw a lot of value in this knowledge exchange and being in the same physical office. And then there was a question about how

big we'll do the next office and basically, then the idea was, why don't we do it much bigger because then we firstly can grow into it, but we can also co-locate some companies of friends? And so that's how the whole idea got started. Then we found the space, it was much bigger than we had anticipated, but we were like, okay, why not? There is not one hub for AI yet in Berlin, so let's just grade it. And so we very naively signed the lease.

00:05:55 Then COVID hit, made the whole thing more interesting. Nobody needed office space anymore but I guess, at some point, we could convince enough crazy people to still relocate and co-locate. I think the advantage of the COVID thing was that, basically, people also rethought the office as a concept, not maybe like a space where you go in every day, but more want to meet and exchange and work together. And so luckily, we could design the whole office in that way that it's really focused on collaboration rather than everybody in their own office. And now it's a really vibrant community.

Jon Krohn: 00:06:27 Yeah, for sure. And you deliberately designed things like having just one coffee space. So even though the campus sprawls over many floors, and something that surprised me when I got there is it even feels like separate... I realize it's not different buildings but it really has a sprawl where it isn't just one elevator bank takes you to all the floors, there's sections over in another part, and so it really has a sense of sprawl, but you, nevertheless, have just one free coffee machine in the center of everything, which encourages collaboration.

Rasmus Rothe: 00:07:02 You need to force people together, and coffee, I guess, is the common force and tea. So yeah, it's really cool. I mean, sometimes when I have a few minutes, I'll just hang out at the coffee machine and there's always two, three people I meet, sometimes, new ones, sometimes, people I haven't seen for some time, and then quickly

moves to like, oh, there's an opportunity, something we can do together or we should discuss something. And that's great. I think that's the spirit of the campus.

Jon Krohn: 00:07:30 So two years ago, we had Nicole Buettner, who also is in the leadership at Merantix, but she's specifically... she's responsible for this Merantix Momentum part that helps businesses, I guess, primarily, in Europe, to be able to accelerate their AI roadmap, or scope out projects, or implement AI projects. So if people want to listen to a lot about Merantix Momentum, they can check out episode number 543. I don't know if there's anything else, in particular, you want to add on that, Rasmus, but I think the key thing is that, so there's the AI Campus, there's this Merantix Momentum, there's also your actual fund, which can be funding startups.

00:08:14 So maybe you want to talk about the fund a bit and specifically, for our listeners, if they're interested in either getting funding for their early stage startup or uniquely, I mean, I'm not aware of any other place doing what you guys do, where you'll actually take applications for founders who don't necessarily have co-founders, who don't necessarily have a particular idea and you just take these founder applications and you help them figure out the team, you help them figure out the idea and then you fund it and help them grow. I think this is a unique model. So I left you with a lot of options there to dig into.

Rasmus Rothe: 00:08:50 No, exactly. I mean, our core, where we are coming from is really this investing and incubation approach, where we basically work with founders, pre idea, pre-team. Sometimes, they bring ideas, often also, we bring ideas of space we are excited about, and then we ideate with them together, help them build, the co-founding team, help also with getting, first, design partners and then fund the company with an initial check of a million euros. That's where we're coming from. And that way, we have actually

built 10 mostly deep vertical AI companies. But actually, now also, the fund starts to expand as of 2024 to directly invest in early-stage AI companies. And I think that's a bit related also in total to our broader platform, as you just mentioned, because basically, we can have companies co-located, we have a lot of potential customers, big Fortune 500 companies co-located.

00:09:39 We have the services company that is working with a lot of SMEs and bigger companies. We have a lot of deep technical expertise there. I mean, Merantix Momentum is also approaching 100 people in terms of team size. So also, if we can help with due diligence on investments, we can help on the go-to market side. We can help the customers. We can bring you to our AI community. We can help you if you sell to other AI communities. And so as such, I think we're quite an interesting or way of starting a company if you're just co-located with us and ideate with us, as well if you already started an AI company, consider us maybe as one of the investors. That's very different because we are building stuff, we're operators, and not in the past, but right now, we continue to build this platform, and I think that can be quite powerful when you want to build a company in this space.

Jon Krohn: 00:10:27 Are you primarily investing in European AI startups?

Rasmus Rothe: 00:10:31 Yeah, big focus is Europe, just because I think that's also where you get the benefits of our ecosystem. Now, I think there's companies from Europe that maybe move to the US, maybe they do YC, where we know them early, that's still something we could invest in, or if there's an interesting startup that wants to build an engineering team in Europe or wants to go to market in Europe, or for some reason, we can add value, then I think we would also be open to that. I think, ultimately, we're pragmatic but, probably, we're not best positioned to see every

		single AI deal at the West Coast. There are better and more local folks to do that. But I think for some companies, we can still be the right partner.
Jon Krohn:	00:11:10	Nice. That makes perfect sense. And talk us through a little bit about the mechanics of, if somebody... so let's say we have a listener right now who's thinking, I want to be an AI founder, I have an amazing background. Maybe they come from a business background or they come from a tech background and they want to make the plunge now, they're obviously experiencing all of the noise around AI right now and they think now is the time for me to take my chance and leave my corporate role or my academic role and to go out and create an AI startup, but I'm not exactly sure what to do, so this Merantix thing that Rasmus is talking about, where I can apply as a founder, how does the mechanics of that work? There's a web form that we can include in the show notes for people just to apply?
Rasmus Rothe:	00:12:02	Yeah, I mean, they can just go on our merantix.com website, and I mean, there, they can basically reach out to us through the website. I mean, they can also feel free to message me on LinkedIn or on Twitter or on any other platform. And then, basically, we will have a couple of discussions with you. Ultimately, we want to get to know you. So the first couple of discussions will be more like interview style, but not like a job interview, but really getting to know you as a person, like, what are your ambitions, what have you done in the past, so you as a character, backwards and forward-looking. But then also, and then, obviously, trying to assess, do you have the founder criteria we are looking for? And then which is strong ambition really drive to solve a certain problem or being in a certain problem space, maybe showing some entrepreneurial skills and track record in the past, even if it's not a startup, but within a bigger organization.

00:12:56 And then we'll talk a bit about you, about areas of interest, like, if you were to start with us tomorrow, where would you want to build a company and what application area? And then we see, is this a fit from a founder to the idea or space perspective, but also, is this something we are excited about? And so that's going to be a couple of discussions, and then we bring you two days onsite, we fly you in and we really work with you and try to work out on a case for two days. And if that goes well, then you can join us as a founder residence, and then we'll develop the idea with you over a couple of months, initially, in four weeks, looking at four cases more high level, and then going deeper into one or two cases for two to three months, ideally, with the final decision gate of the investment committee where we then invest a million euro.

00:13:41 And at that point, usually, the founders have already a co-founder in mind and have worked with them for some time, maybe a couple of ideas of who they would initially hire, and what's most important to us have two, three design partners, like bigger corporations or other startups or whoever are your first customers, that say, look, if you get this off the ground, we will pay for it. We are willing to also commit resource to that and we want to become your first customer. And that's something we help a lot with our platform to get that because that's a bit the cold start problem, both in terms of you getting people believing that even though you haven't built anything yet, that you can get this off the ground and there's capital and everything behind it. But also, for you, obviously, then to find product market fit much quicker because you can directly iterate closely for the first customer.

Jon Krohn: 00:14:30 Your business gets to a certain size and the cracks start to emerge. If this is you, you should know these three numbers. Thirty-Seven Thousand. Twenty-Five. One.Thirty-Seven Thousand. That’s the number of

businesses that have upgraded to NetSuite by Oracle. Twenty-Five. NetSuite turns twenty-five this year. That's twenty-five years of helping businesses do more with less, close their books in days, not weeks; and drive down costs. One, because your business is one-of-a-kind. So you get a customized solution for all of your KPIs - in one efficient system with one source of truth. Manage risk, get reliable forecasts, and improve margins. Everything you need to grow, all in one place. Download NetSuite's popular KPI Checklist, designed to give you consistently excellent performance - absolutely free, at NetSuite dot com slash SUPERDATA. That's NetSuite dot com slash SUPERDATA.

00:15:17 Very cool. I took some notes there, I think, as you were going through it to recap that back, so people who have drive, maybe some demonstrated entrepreneurial skill in or outside of a startup, a clear area of interest, if they meet those kinds of criteria, then they work on a case onsite for two days, if that goes really well, then they can become a founder in residence for several months. If that goes well, then there's things like a million euros in initial investment, as well as knowing exactly, I guess, at that point, who your co-founders would be, maybe some of your initial employees, as well as having two to three design partners, which sound like these are companies that are likely to be early customers that can help you shape your early product.

Rasmus Rothe: 00:16:01 That's correct. And often, it's even already contractual with these design partners, so they really commit some upfront fee and some subscription revenue conditioned upon you delivering, obviously, something. But I think that's quite cool. It's not just some fuzzy LOIs.

Jon Krohn: 00:16:16 That sounds great. I mean, it's awesome to be able to get right from the early stage, have some traction, have some revenue coming in, be able to get product feedback

directly from somebody who is your client using... So very cool process.

Rasmus Rothe: 00:16:30 And maybe just one more thing to add, I think the founders also have very diverse backgrounds. So I mean, some come from corporates and I've seen how it's currently solved the problem and then want to solve it the startup way. Some come from machine learning research and see an opportunity from that perspective. Some have done startups before. Generally, people have a few years of experience. We have few people that came right out of college, but we also have those. Many have a couple of years of experience because we also tend to build on these deeper verticals like healthcare bio industrials, some more complex enterprise processes. And so it helps if you have seen that in the real world to know what problem you solve, and also be in an area where maybe it's not so generic that there's a hundred other teams trying to do exactly the same.

Jon Krohn: 00:17:21 Yep, very cool. Thanks for highlighting that. One quick thing, as we mentioned all these, all these different Merantix things, Merantix AI Campus, Merantix Venture Fund, Merantix Momentum, what is Merantix? What does that mean?

Rasmus Rothe: 00:17:35 So I mean, Merantix, the name came up... I guess, we had some meeting, it was just Adrian, me, my co-founder, when we just got started, I guess we hadn't even registered the company and we had a meeting in an hour and we needed a name and we liked nature and the concept of growing things and trees. I mean, Sequoia was already taken. But then we basically looked for the 10 largest trees in the world and actually, the seventh largest, I think, is the Meranti tree, I think it's predominantly in Indonesia. So we said, look, it's a tree, it sounds somehow nice. And then we just put an X at the end to make it sound a bit more Tax-Indo, and that's

Merantix. And then we checked the domains, trademarks and everything, and it was all fine. And then we were like, let's register, go, let's solve the next problem. So quite pragmatic, no agency or anything involved, it was just us, coming up with the name in short notice.

Jon Krohn: 00:18:29 Well, I think it's great. It's catchy and unique, and it has this idea, to me, it has this feeling of mechanical, a process, this tech feel. I don't know, I get images in my head of gears turning and things building somewhere when I hear Merantix. I didn't know it meant a tree but I always had this mechanical idea in my head that I think it's nice.

Rasmus Rothe: 00:18:55 We always wanted to plant the tree, actually, here at the campus, but I think it's too cold here.

Jon Krohn: 00:19:00 It's too cold. It wouldn't be good to have a skinny tree that's struggling to survive as the-

Rasmus Rothe: 00:19:09 That would not be a good signal.

Jon Krohn: 00:19:10 It's not a good visual. Fantastic. Nice. And on top of all those things that Merantix is already doing, the momentum, the consulting arm, the venture fund, the physical campus, on top of all that, you're finding lots of new ways to be involved and make an impact in the world across policy, as well as entrepreneurship. I mean, we're recording this before it happens, so you're not going to be able to talk about what it was like, but at the time of publishing this episode, last week, you were in Davos at the World Economic Forum with this AI House that Merantix launched. And so the concept there is to have a physical location at, probably, the world's biggest annual meeting of leaders from all over the world, where you will specifically be highlighting the conversation around AI, the opportunities, as well as, I guess, making sure that we're mitigating the risks.

Rasmus Rothe: 00:20:11 Yeah, exactly. I mean, it's kind of the same concept of the campus, bringing together all the different stakeholders, founders, researchers, corporates, policymakers, investors, general public in one place and having discussions and doing business around AI. And so the campus is permanent. The AI House is a one-week popup during the World Economic Forum. And we have a lot of stakeholders involved there. So I'm sure it was a great week. I don't know yet, but I guess by the time-

Jon Krohn: 00:20:40 Yeah, no doubt.

Rasmus Rothe: 00:20:42 ... this is published, I think we'll had a quite tiring week and hopefully, a lot of good discussions and a lot of new collaborations coming out of this.

Jon Krohn: 00:20:47 Yeah, yeah, yeah, no doubt. And so with all of these kinds of things that you've been involved with, starting yourself, as well as all of the AI startups that you've invested in, or that have been incubated at the AI Campus, are there some key factors that you can highlight for our listeners that make an AI startup successful or that allow an AI startup to attract venture capital?

Rasmus Rothe: 00:21:16 I think especially in current times, and I mean, it sounds very simple, but I think showing real customer traction and revenue is even more important. I think the times that you purely raise on research and fancy demos is gone for the most part. So I think especially if you're an enterprise or SME, showing real customers using and paying for your product, and I guess it became even more important because we see now a lot of VCs also being worried about these so-called thin layers on ChatGPT kind of companies, where people are like, okay, is this a real company or will there be the customer just use ChatGPT in the future and that language more or less powerful enough and if it has integrations, can do the job. So I think the easiest way to circumvent this is actually

showing, look, no, he has a customer that pays tens of thousands or hundreds of thousands of dollars for the solution per year and clearly more than the person would pay for a ChatGPT.

00:22:14 And so there seems to be real value in this product because, I don't know, maybe the language model is more fine-tuned on some specific data, or it's like the whole product around it or workflow solution or other reasons why this is a standalone product. So I think that's something a lot of companies need to find. And I guess, a lot of VCs are... I've been also scared about as these horizontal platforms, like the big cloud providers become bigger and bigger invested on AI, move very fast also and try to catch a lot of this horizontal things. So I think we've been generally more excited about going into these deeper verticals where you solve a very specific problem in a deep space. We have a breast cancer screening company, we have a protein materials optimization company and a computer vision company in the industrial space, very specific applications because that's something likely car provider will not do.

00:23:05 But at the same time, obviously, market needs to be large enough, it needs to be... You still build a platform but in a vertical. Whereas, I guess, on the general tooling layer, you can still do stuff. And I mean, there are big companies there but you also can be quite dangerous water there. And then I think related to that is also, I guess, the founder space fit, like, do they have experience in that space, show traction? But ultimately, a lot of the concerns of investors you can solve with real revenue, real customer traction, I think. There's a lot of AI hype around it but as now most companies use AI here and there, somehow every and no company is an AI company, and it's such also the same other metrics, I think, are often applied, minus, obviously, hype and there's always FOMO and stuff about specific companies, but yeah.

Jon Krohn: 00:23:56 This idea about the verticals, I think, is a really interesting one and something that you at Merantix have been able to leverage to great effect because you can have different... I mean, correct me if I'm wrong about this, but my understanding of the situation over at Merantix is that you could have a machine vision company like Vara that is focused on breast cancer detection or these radiology in-hospital applications of machine vision. I think one of your big success stories, one of the companies that has already exited from the entire Merantix system, SiaSearch, that they were doing machine vision as well, but they were for... if I remember correctly, it was about annotating video from self-driving cars, this kind of thing. And so you have two machine vision startups, completely different verticals, but they can leverage each other's expertise and maybe even some shared resources in order to be able to grow faster and make a bigger mark in their vertical. Is that right?

Rasmus Rothe: 00:24:55 Yeah, I think that's exactly right. I think there's a lot of, I guess, commonality around, if they use the same data modality, the companies that use LLMs versus computer vision models, them exchanging on each other, on the technical side, general, I guess, best practices on MLOps kind of infrastructure related things, but also procurement processes. Right now, I mean, a lot of these enterprises are procuring LLMs for the first, second or 10th time, but certainly, at the beginning. And so if you sell a big enterprise, an LLM solution like, what boxes do they need to take? Is there anything additional they check? A lot of big companies struggle with this. And so that's something that our companies can share best practice on about, how do you convince somebody in the procurement department that your LLM doesn't break any laws? And so I think these meta-level topics that are not specific and in that sense, not pure competitive advantage for your specific company are then shared across our companies and also across the campus.

Jon Krohn: 00:26:00 It seems like there's even opportunities for companies to grow in the ecosystem itself that serve a lot of these different needs. So you, specifically, there are talking about security. In episode number 736, when I was there in Berlin, I interviewed Jan Zawadzki, who his startup is focused specifically on AI certification. And so this is something that, I think, is particularly important in EU because there is going to be some certification requirements coming down the pike very soon. These kinds of certification ideas can be great regardless of whether there's regulations that require them or not because it can show to consumers, prospective consumers that your algorithm is safe, it can be trusted. And so it's interesting how the ecosystem supports these kinds of specialized companies, something like that, Jan Zawadzki's company can be then certifying tons of different companies in your AI Campus. So this ecosystem supports itself.

Rasmus Rothe: 00:26:58 Yeah, exactly. I mean, in Jan's case, I mean, in the robot's case, with their company, there's probably like 100 customers on the campus for them, but also design partners, they can iterate the product with them. When the new EU AI Act came out, there was more about regulation, it was great to have them on campus and also see their perspective, as well as we have a couple of foundation model companies on the campus as well, see their perspective, see the application side. I think that's really cool and that's like, we have a quick 20-minute chat, we bring the right people together, you can do it spontaneously, and then that's something otherwise would take much more time to set up, or you might not even do that. And I think that's where the community is really strong.

Jon Krohn: 00:27:40 Yeah, yeah. And so for people that are in Europe, obviously, the place that they should be thinking about, if they want to be involved in this kind of AI ecosystem, is at

Merantix. Are you aware of anything else in the world that is even remotely like what you're doing?

Rasmus Rothe: 00:27:55 I think as a broader concept, yes, but maybe less specialized. I mean, I highly think of the station F team and efforts in Paris as an ecosystem. And they also have now some dedicated initiatives on AI. But I guess, more broadly, it's like broader startup ecosystem. But I think the way they think about the community, bringing stakeholders together is very aligned with what we do. And I mean, there's other hubs like that, I think, in the US, also often around, I guess, the university campus, you have a lot of startups, corporates, investors, if you think about the whole Stanford ecosystem, just as one example of what's happening in Boston. So I think that kind of stuff is often more centered there around universities, which we also have in Europe, but maybe less strong. And so that's why there has been more and more of these startup campuses to create the density, especially in bigger cities like Berlin, Paris, London or so.

Jon Krohn: 00:28:49 So it sounds like specific to AI, because all of those things that you mentioned, those are about tech, generally, tech startups. And yes, of course, right now, a lot of that is going to involve AI, maybe not a majority, but a lot of it is going to involve AI, if not a majority. However, it sounds like, specifically, you're not aware of anywhere else that is like this AI venture studio or an AI incubator, specifically.

Rasmus Rothe: 00:29:13 Yeah, I mean, I haven't met anyone. I think there's some venture studios, there's some campuses, but they're all... That's why it's sometimes also hard to explain a bit what we're doing because we're doing so many things, and they all somehow play into each other, but it's not like your classic company having one product or your one services company or your one co-working. It's all intertwined. And that's, I think, the benefit. The balance is we see each of these initiatives as its own initiative, with its own

objective, its own management team. So really, they have their own goal to push, but because we are the orchestrator of this and the initiator, we can then control a bit how they interact with each other, and finding the right balance of them having their own focus versus supporting the ecosystem is something we need to balance all the time.

00:29:57 And there's always a trade-off. And at some point, some of these organizations are more focused on themselves. The Campus wants to be greater as a campus, or Momentum wants to grow more customers, and sometimes it's more about, how do we have Momentum better act with our entire founders or the founders more integrated in our Campus? And it's always a balance to strike.

Jon Krohn: 00:30:16 And if you're interested in real business applications of LLMs, I recommend listening to last month's episode #743 with Piotr Grudzień. Piotr is the co-founder and CTO of Quickchat AI, a YCombinator-backed company that builds custom AI assistants for businesses. Piotr and his team have been developing AI solutions since 2020 and have seen a lot. In his episode, we talked extensively about the successful applications of conversational AI in real-world business scenarios, how to handle hallucination problems, and the future of LLMs. Check out episode #743 or — if you're interested in building an AI assistant for your own business — you can just go straight to their website, Quickchat.ai

00:30:59 Nice. And I can imagine for the companies or for whoever's investing in Merantix, in the AI Fund, in particular, that breadth, they're able to be all in on AI, which I think is a safe bet today. And probably, a lot of our listeners on the data science podcast agree. But they're getting diversified exposure to a lot of different companies across a lot of different verticals.

Rasmus Rothe: 00:31:23 I mean, that's also what we see with some of the LPs joining the fund as an investor, that that's obviously a financial investment with financial returns and with co-investment opportunities and access to the portfolio companies. But the interesting thing is, especially for some of the corporates into the fund, that they also have then an opportunity to see us as more like a strategic partner for AI, and they can co-locate a team on the campus. They can work with Momentum and become a customer there. They can talk with us about the policy topics that maybe also have an impact on their business.

00:31:54 And it's not like that we as a fund team that is not that big can answer all these questions, but we basically have different organizations that can help them with that. And if they become an LP in the fund, obviously, they become a very deep strategic partner for us. And I think that's quite unique which maybe other funds also try to sell as an argument, but which is, I think, harder to deliver on when you don't have this ecosystem organization. And I think that's then also what we leverage again because if we have corporates in the fund, there again, we can use them as a design partner for our new customers. So it's also value add for us beyond the money.

Jon Krohn: 00:32:26 Nice. And so for our listeners who aren't aware that LP abbreviation stands for limited partner, and so this is like, in VC funds or private equity funds, these are the people who invest. I think the term comes from this idea of, they're partners because they're providing a lot of capital but they're limited partners because they're not necessarily controlling things, specifically. So there's a term for you. Something, Rasmus, in terms of investment success, we pulled out from an interview that was published four months ago, so this was, actually, an interview that you did in German around... I guess, in German, AI is KI?

Rasmus Rothe: 00:33:14 KI, yes. KI abbreviated.

Jon Krohn: 00:33:20 And so it's this interview that you did on KI-Hype, and in it, you talked about concrete metrics or benchmarks that indicate that a company has achieved enough in terms of data network effects or feedback loops that allow them to have a defensible competitive advantage with AI. I don't know, do you remember that interview? Do you want to talk about any of these kinds of things, these kinds of concrete metrics that AI companies can be looking to have in order to show that they have a defensible competitive advantage?

Rasmus Rothe: 00:33:55 Yeah, sure. I mean, you probably have more information now about what I specifically said in the interview than I have, and great that you... I mean, you speak German, I guess, so you could actually pull it out and not just use a language model to translate it. I think one thing we think a lot about is, are there any networks effects on the data side? And I think people have realized that some of these network effects are weaker than they think because, I don't know, if you get access to a data set, that's a great headstart, but somebody else can, maybe from, I don't know, if it's a medical dataset, go to another hospital and get the same data set. And so it's a headstart but it's not like a defensible mode. What we find more interesting is if you can, for example, build datasets that are not publicly available and that also, you only create as you are doing business.

00:34:43 And so I give you a concrete example, for example, we just started a new AI litigation company that, basically, can do litigation at scale using language models. And there's a lot of legal tech startups, there's a lot of language models that are getting better legal and you can train them on a lot of legal techs, but lots of people can do that. But the interesting data we will connect with that company is that once we've done tens of thousands of cases at the

litigation, we will know what arguments work well for which cases and maybe against what other counterparty. And that data is so fragmented across so many little law firms that nobody has even aggregated the data and it will be impossible to aggregate this as scale, also because you can only aggregate it prospectively if you, in a more structured way, I guess, build your arguments rather than have a chaos from hundreds of different law firms.

00:35:34 And so that's, I think, a dataset we built in the long term, that then allows us to create even better arguments in our litigation and maybe win even more cases and thus makes it even harder for other entrants to come into the market. That's kind of, I guess, network effects as you start to be in business with your AI company and datas you collect that is very unique to what you have versus others. Same for our breast cancer screening company, I mean, you can collect a lot of medical images and to partners with the hospitals. I think what we have started to collect is longitudinal data about the same patient coming in over and over again and also asking for additional information about the patient's history.

00:36:11 And so as such, getting a much more concrete picture about the patient's history and using that all for our AI models and making predictions and training on that. And that's something that data wasn't collected so far, and so it allows us to be better than anyone else just looking at images, and this kind of stuff only works when you are in practice and when your AI model is deployed. And I think that can be very powerful as an AI company.

Jon Krohn: 00:36:39 Nice. Great, great breakdown there. It makes perfect sense to me. So these kinds of, if you can be collecting data that your competitors won't be able to get their hands on, and so these network effects, as you build your platform, allow you to build better models, allow you to bring in more people, and so you have this flywheel

between proprietary data that you're collecting, proprietary models that you could be developing and therefore, more and more customers that you can get, the more value that you can drive for them. All right, and then actually, from that same interview that we pulled that information about these data network effects, another topic that came up in there is how AI is moving so quickly that as an AI company, it feels like you can be... and I experienced this myself with my own AI company, you're trying to develop a product roadmap, features that you think your clients will need.

00:37:33 And so you're trying to look ahead several months and be planning what the engineering team needs to be doing, creating storyboards, user stories, allocating the story points to particular engineers to be doing particular tasks and to be developing these product features. But with AI moving so quickly, and you touched on this a little bit earlier when we were talking about verticals, where it can be the case that what if GPT-5 comes out later this year and it's completely has all of the functionality that you spent six months or 12 months developing a special model for. And so with things moving so quickly, do you have any advice for startups that want to somehow be able to maybe not even just deal with this, but actually, maybe get some advantage from it?

Rasmus Rothe: 00:38:28 I think it's a great question. I mean, I certainly don't have the full answer, but I think there is a few... there's always surprising new things that come out, but I think there's a few things to focus on. So first of all, I think from a, I guess, CTO perspective or engineering leadership perspective, I think it's important to have people that are not falling too much in love with a certain technology and also flexible to throw everything away they've built so far, if there's a new model coming out, even though they worked a couple of months on this, so not going into this sunk cost fallacy, I think that's super important and that

mindset needs to be in the whole engineering team and also being totally fine to use open-source, use whatever is out there, to be as efficient as possible. I think that's one thing.

00:39:08 I think the second thing is, basically, thinking really from the perspective of the big cloud providers of what might be on their roadmap and putting yourself in their shoes. And I mean, you see what they've published so far, so you can build your own mental prediction model of where they will probably go next and see, is this something... if I think about all the different things they could do, is this something they might publish soon? I think the other part is if you think about model performance, I mean, for some applications, maybe your AI model is not good enough yet. And I mean, I see a lot of people saying concerns, I don't know, they still have legislation with language models and things going wrong and there are always some bad examples, but there, I make it always very simple, I just look at the historic plot of some accuracy score and then just extrapolate it.

00:39:59 And even though there's diminishing returns, usually, there's some bumps, ups and downs but usually, that gives you a good indicator of how much better things will get. And you might not know how things get better and who will invent it. And if it takes a month longer or a couple of months longer or not, but you know things get better. There's enough people working on it. So extrapolating performance on these technologies gives you also... even if you don't know how we get there, gives you also an indication what might happen in the future and how that might maybe make some of your technology obsolete or might be another technology that suddenly maybe replaces what you're doing.

00:40:34 So I think that's another right item to give. Actually, when I think about business cases, I always think about, what

if the AI model was perfect, would the business case then make sense? And then I try to work back first and I like, okay, assuming it doesn't work that perfect yet, but pretty decent, can I still engineer the workflow in a way that my customer is happy? And then as the model gets better, my value proposition to the customer hopefully also gets better.

Jon Krohn: 00:40:57 Excellent. Great practical tips there. So clearly, in this episode, you've already demonstrated tons of your chops around AI innovation and getting tech startups going, getting founder teams together, getting product market fit, having a successful AI company, being able to exit, but in addition to all of that, that you do on the commercial side, you also have a huge involvement in policy. I follow you on social media and I see you constantly hobnobbing with the literal heads of Germany and Europe and speaking at German parliament. And so you're playing a huge role in AI adoption, policies, regulation in Europe and therefore, the world because Europe tends to be the leader in regulatory frameworks globally.

Rasmus Rothe: 00:41:51 Unfortunately.

Jon Krohn: 00:41:56 Do you want to elaborate on that comment?

Rasmus Rothe: 00:42:00 I don't know. I wish we were not the leader in regulation, but rather in building impactful AI companies. But that's what we have to work with, I guess. And I don't think we'll get rid of that reputation as Europe in the next decade or so, but yeah, it's true, I mean, what you said.

Jon Krohn: 00:42:18 And that's a big part of what you're speaking to, when you're doing these kinds of things, you're advocating for the side of, yes, we need to be... Some regulatory frameworks make sense. We want to make sure that we're not having a negative impact on society with AI. But

simultaneously, we need to be creating an environment where AI companies, even early stage startups can thrive. And that's the kind of argument that you're making, right?

Rasmus Rothe: 00:42:45 Yeah, exactly. I mean, the thing is we have this regulatory train happening in Europe and just, I guess, end of 2023, the EU AI Act got passed, which is a big regulatory framework on the European level regulating AI. So what I try to advocate for is that this regulation is in a sensible way, it's fine to forbid some high risk or things we just don't want to do. I don't know, some social scoring things where we in Europe say, look, that's a no-go. But I think it needs to be encouraging that people build applications in high risk areas such as healthcare, autonomous mobility, where yes, a lot of things can go wrong, but those are also the areas with the highest reward. I mean, yes, there's a lot of regulation but because things can be really bad, people can die, but also if things go well, people are not dying that maybe would've died otherwise.

00:43:39 And so I think flipping that narrative around is something that is very obvious, but still, if you read the regulatory text and how things are communicated, they're always looked at from a negative perspective. And I think it comes back to the point that we're not benchmarking the status quo in a proper way. We humans make so many mistakes. I mean, doctors misdiagnose so much. One in a half million people die in car accidents related every year. So we humans are actually really bad. We make a lot of mistakes. There's a lot of points where NEA would be much better. And that's our benchmark. That's what we're benchmarking against.

00:44:13 And so every AI is by a margin better than that, we should seriously considering employing it. And maybe it's not just the AI, it's a human and an AI as a backup, but I think that's the thing. And I think right now, a lot of

regulators have double standards. So they say, look, the AI needs to be perfect, no bias, no mistakes. But the reality is, I mean, that's great but that's not the standard we should compare it to, and-

Jon Krohn: 00:44:39 Bias variance trade off, come on.

Rasmus Rothe: 00:44:43 Yeah. I mean, then we should just have random AI that just makes a random decision, then we probably won't have a bias, but that's probably also not solving the problem.

Jon Krohn: 00:44:53 Empower your business with Prophets of AI, the leading agency for AI and robotics experts. Whether you seek a captivating keynote speaker, a company workshop host, or even guidance in implementing AI seamlessly into your organization, Prophets of AI connects you directly with the luminaries shaping the future of AI, such as Ben Goertzel and Nell Watson, both of whom have been phenomenal guests on this very podcast. Whether you are a large global enterprise or just beginning your AI journey, Prophets of AI have a solution for you. Their speakers have graced the most prestigious stages around the world. And now, you can head to prophetsofai.com yourself to see their full roster, or to the show notes where we've got their contact link.

00:45:36 I was just doing some extrapolation, some projecting in my head with you talking about, so things like self-driving cars, so let's say... it could even be the case today, that self-driving cars are safer per kilometer driven than a human driver. If we get to a point where it's clearly demonstrable that it's 10 times safer to be in a self-driving car or to have self-driving cars on the road as opposed to having humans behind the wheel, it is interesting to think, following that logic, that, potentially, Europe could be one of the places that is first to say,

actually, you know what, we can't have any human drivers.

Rasmus Rothe: 00:46:16 That could be actually really interesting that, I guess, for some of these high risk areas, we then say, look, humans are just too risky at all. I think that would be a nice switch around.

Jon Krohn: 00:46:25 Yeah, exactly.

Rasmus Rothe: 00:46:26 I would love to see that.

Jon Krohn: 00:46:27 Yeah, that'd be cool. Something that we haven't mentioned on air yet is that you also lead the German AI Association. And so I think that this is probably a big part of how you're able to have influence on policy and be able to get the zeitgeist to use the German word, beyond not just the Merantix AI Campus, but across AI startups all over Germany and Europe. So just a few minutes ago, with you making that joke about, unfortunately, Europe being a leader in AI regulation, that's a disadvantage of Europe, but are there advantages as well, if somebody is thinking about creating a startup in Europe or investing in a startup in Europe, are there advantages relative to investing, say, in Silicon Valley or elsewhere?

Rasmus Rothe: 00:47:26 I mean, if you look at from a regulatory perspective, I mean, if they now do it well, and right now, the regulation is still at a very high level, but now in the next couple of months, they need to make it very concrete for use cases, then that could create more clarity for companies, and especially for customers, I think the biggest bottleneck is not even with the startups so themselves, but it's when you then try to sell such a high risk risk application to hospitals, to governments, to customers that the customer knows, what you're doing is safe, the LLM is only trained on this kind of data, not infringing any copyright, and it was tested against certain biases. And

here, according to the EU AI Act, this is my model sheet, everything is fine. This could actually maybe accelerate some of the procurement processes, which, I think, would be very favorable. I think with the GDPR, even though also GDPR was a good idea and is a good idea, there was still a lot of uncertainty about how the law actually applies.

00:48:27 And if it creates more uncertainty than before, then it's actually bad. If it creates less, then it's actually good. So I think it could be an advance there. And I think the other thing is, I guess, there are some companies already, as you mentioned, Jan Zawadzki's company, Certif.AI, that are focusing on certification of AI models and these kind of things. So maybe also new business models that are created, specifically, in Europe. Ultimately, I mean, this could also be a role model similarly to GDPR, to other jurisdiction as how AI is broadly regulated, from a framework perspective. And then, obviously, if you're in one of these high risk areas, it's good to see what Europe has been doing, because that might then also get applied somewhere else. Otherwise, I think Europe is... technical talent is also great here. I mean, a lot of the greatest AI research are sometimes originally from Europe, and or some are still in Europe.

00:49:18 So I think even if you're maybe considering building a team here could be interesting. I mean, living costs are still much cheaper than in many of the hotspots in Silicon Valley or New York also. So I think there's an argument for that. And then also, I guess, in some industries, I don't know, if you are in the industrials AI space, there's great manufacturing business here, so you might want to work with some of the best in class customers here. And that's what we also see with one of our companies, Deltia, they started 12 months ago, first customers all in Germany and Europe, and now they started to expand and sign first customers in the US. And

so build the company and the team world-class here in Europe with really advanced customers. And with those logos now and that expertise, they're now expanded to the US. So I think for certain verticals, there has an advantage of building the company in Europe.

Jon Krohn: 00:50:09 So amazing technical people, lower living costs relative to, certainly, San Francisco or New York or even Boston, access to these amazing manufacturing, which I'm going to go into a bit more detail in a second. And then something else that occurred to me just as you were listing those is there's also a really strong social security net in Europe. So this means that it provides a bit of a security blanket so that you can take risks, because in a country like the US where there's very minimal social security net relative to Europe, even taking risks itself is riskier because you can be putting the livelihood of you and your family at stake in a way that maybe you can feel more comfortable doing in Europe.

Rasmus Rothe: 00:51:01 That's an interesting thing I've never thought about this way. I think, in theory, this should lead to more risk-taking, but I would argue people take less risk in Europe. But if you're a risk-taker, that's actually even better because you can reduce the downside more. But at the same time, I guess, if you take risk, you're also even more fine... generally, a risk-taker, you're even more fine with risking to have a bigger downside. So let's see what's the causality there. But it's an interesting thought. I need to think about this further.

Jon Krohn: 00:51:32 And so I guess, speaking about this kind of risk, as well as manufacturing, something that some of our listeners may be aware of, but the economies of German-speaking countries in Europe, which are often referred to by an acronym, DACH, so Deutschland, Germany, Austria, Switzerland, so the D, Deutschland, A, Austria, and then the C-H in DACH is Schotz, so Switzerland. A lot of the

business in these economies is driven by these stable, medium, and small enterprises, which are called the Mittelstand.

00:52:11 And this Mittelstand, while it drives manufacturing innovation and it's exported across the globe, it's definitely something that is unique to Europe. You've mentioned, in recent interviews, that these kinds of companies have longer sales cycles and some skepticism towards adopting new technologies. So I wonder if these kinds of things that you're describing, like clarity on policy in the EU, maybe that will also help the Mittelstand feel comfortable with adopting new AI technologies, and that could then also help create a flywheel in Europe for AI.

Rasmus Rothe: 00:52:54 Yeah, I think so. I think, generally, the whole, I guess, public discussion around AI and how it will change the world is also reaching the Mittelstand, all these traditional businesses. And I think also has made them more open to try out AI, employ AI. So I was just talking to a big Mittelstand company. It's a company making a couple of billion in revenue. You've probably never heard of it, you've probably never seen any of the machines they manufacture, but they're the market leader in that. And therefore, I was surprised how much they already started to employ AI and robotics and root cause analysis and basically, using LLMs for all their back office processes. So I think it's starting, and I think a lot of these businesses, I mean, they've grown in the last 100 years or so by incrementally improving some machine by a percent.

00:53:46 So it's a very incremental innovation, but then being best in class there, and now they also start to see that, especially AI can be very disruptive to some of their business parts, to maybe how their machines are used, analyzed, additional data products they can offer. And so

I think some of these companies start to realize that. And that's obviously an opportunity for startups because they will not build everything in-house. And many of them have been profitable for decades, and so they have, in theory, capital to invest. But it's a process. But for these kind of businesses, if your startup is going after them, then actually, DACH, Germany, Austria, Switzerland is a great go-to market.

Jon Krohn: 00:54:25 Awesome. Great answer. And related to that, related to specific things about Germany, in particular, is Germany is renowned for its vocational training system, so Berufsschule, so these are apprenticeships, strong labor unions that mean that the blue-collar workforce in Germany is highly skilled, really well respected and is integral to Germany's economy and industrial success, including across these Mittelstand companies. So there's a lot of pride in blue-collar work and a lot of respect, I think, in a way that it would be nice to see... for me, growing up in Canada or living now in the US, I would love to see that same kind of level of respect that I see for blue-collar work in Germany in these other places that I've lived. And so I think that that's something that is also a strength for this area. So maybe there's AI companies where there's going to be technical components where, for the foreseeable future, some blue-collar involvement is going to be needed. You're going to have access to amazing highly skilled workers in that region.

00:55:40 Now, looking ahead, obviously, you are super bullish on AI. I'm sure you have a big vision for how AI can transform society for the better. And feel free to dig into that vision broadly for us, but specifically, talking about blue-collar work and maybe white-collar work as well, I wonder what thoughts you have on how AI will transform work in the coming decades. I'm providing a lot of framing here, so feel free to cut me off and just start explaining at any point. So for example, one of the big trends, over the

past decades, that people, I think, expected with AI was more automation of blue-collar work, so robots in factories doing repetitive work.

00:56:33 But just now in the last couple of years, really, the last year, since, particularly, the release of GPT-4 last March, we've seen that, actually, suddenly, it seems like white-collar work, cognitive work that is going to be much easier to scale up and replace. So yeah. So I guess I'm getting lots of things here. It's like, one, what do you see as the future, the big impact that AI can make positively in society, but also, how is this going to affect white-collar work, blue-collar work, et cetera?

Rasmus Rothe: 00:57:08 I think, for me, I mean, the blue and white-collar split and what is the average income of the kind of job you're disrupting, by that, classifying what AI disrupts and whatnot, I think might not be the right way to cut it, even though that's how, I guess, most people cut it. I think about it more in terms of how many data modalities do you have to interact with, both on where you get data from and where you create data. And so jobs where you pretty much just interact with one data modality and maybe don't need to interact with people, the physical world, and that could be a lawyer, but that could be also somebody in customer support. Both jobs, I mean, if it's text-based customer support or a lawyer, it's also text bases, often like contracts, you're interacting with... you're reading what, either the customer writes or what your client maybe wants in an email.

00:58:00 So both the text and then you create stuff. You answer in customer support, or as a lawyer, you basically draft the contract. Now, one thing is much more complex maybe than the other and that's why the person gets paid more. But in the end, it's the same kind of modality you interact with and some of the same process from an AI perspective. And so I think both things will disrupted.

And we've seen that for an LLM, it doesn't matter so much if the topic is more complex or less complex. It's just a matter of, do you have the data around this topic, and then you throw it in and then it's going to be really good. And so both things will probably be definitely disrupted, but it's not by pure celery or white versus blue-collar or more complex, less complex task. Especially with the physical world where you need, probably, robots to do the tasks, whether it's care in elderly homes or nurses or maybe even service and restaurant, but maybe also management jobs that are a lot about meeting people also in person, resolving conflicts.

00:59:07 These kind of things maybe take longer to disrupt because you need to interact with a lot of different modalities, and that becomes harder because you also have texts, you have presentations, you have calls, you need to meet people in person, you need to travel. That kind of stuff will be harder to replace. But I think these singular modality things, I think there, we'll see more progress. We also start to see more AI models that are better with multimodal, I mean, images and texts, obviously, but maybe also for pharma, including biological data, there's some multimodal models now that also then can work with robotics and robots and also texts that will also maybe expand the scope. But I think, ultimately, all these jobs will be changed, for some parts, will be of a job... maybe will be fully disrupted. I don't think the lawyer as a total will be disrupted, but there will probably be maybe some of the easy litigation cases like, what we tried to disrupt will be disrupted.

01:00:04 Now, you're in a billion dollar private equity this transaction, where it doesn't matter how much the lawyer costs and you can't afford seeing a mistakes and you don't mind paying 10 people that maybe will disrupt it later. So I think it's often also just certain chunks, even within customer support, some of the easy requests are

already automated. Now, some of the more complex ones, you still need to talk, at some point, to an agent because just not all the data's in the system. And so I think we'll see certain parts of the jobs getting disrupted, and as such, also maybe job profiles change because it's not the same job as it was now in 10 years, and so it will be very vibrant. I think in 10 years, the world will look very different but ultimately, for every day we work, I think we'll be more productive because there will be stuff that we can automate and that's exciting.

Jon Krohn: 01:00:50 It's interesting that you selected lawyer there for a lot of your examples when that same kind of single modality, especially when you think about me since the pandemic, I'm completely remote. And so data science work, software development work, this is strings of text that we're creating. We're taking in natural language instructions, maybe from a project manager or a user or an executive and converting those natural language instructions into strings of code.

Rasmus Rothe: 01:01:20 I mean, I know your audience and listeners, I didn't want to talk too much against them. But at the same time, many of you are using Copilot and similar tools, so are getting supported when writing code. And I think, again, we'll see the supercharge of the software developers and some parts, maybe humans will not write the code anymore and maybe as many software developers will more move into a architecture design kind of role. And then the actual code will be written by machines. So in that sense, software developers are now also moving up the stack. So I think that's interesting, which is like, so you somehow do less but you will do the more complex thing, because you might have to, in a very abstract way, figure out what you want to build, and then the whole coding, somebody else will do, like the machine, but it doesn't mean the task is easier.

01:02:14 It's the same with, I guess, when teachers now complain about students not writing the essays anymore because ChatGPT writes them for them, sure, but then telling ChatGPT how to write it, to answer the question well, and then reviewing what ChatGPT wrote and iterating, that's more what the teacher does, it's like grading it and trying to optimize for the best grade. And you could argue that that's a harder role than actually writing it. So I think we'll just use these tools or get more productive, and also change and that's exciting.

Jon Krohn: 01:02:50 I agree. It moves us up the value chain. A talk that I gave in early 2023 centered around this idea of the data scientist, thanks to these foundational LLMs, things like GPT-4, it allows data scientists to become more like a data product manager because you can be thinking about... you can just think about what would be the ideal model for my users. And then you can be orchestrating one or more of, as you say, you said somebodies, of these machines somebodies to be... you can be delegating different parts of the work and you can be generating the data or simulating the data that you need to create really powerful models, or you can be leveraging existing LLM foundation models or fine-tuning them to your needs.

01:03:41 So there's suddenly all these ways, whether it's with co-generation or access to models be the open-source or proprietary that allow us as data scientists to be way more powerful than ever before. And so we can spend less of our time down in the weeds of trying to get some two different libraries to interact together the way that we want or to generate the code for a neural network, those kinds of things can be automated and we can focus on bigger picture, higher value things like, what does our user really need and how can I use this abundance of tools in order to deliver on that need?

Rasmus Rothe: 01:04:20 But coming back to the points, I mean, exactly this interaction with the user and understanding the needs, that's again like, you probably need to switch a lot of different modalities. You need to talk to the users, you need to physically go there, you need to see them interact with the product. You need to have that conversations feedback. It's a lot of different data sources where your information comes from, and the more complex that becomes, the more it still needs the human. But then once you know what you want, turning that into product, that's just in a single modality and that's then just write a ton of code, generate that and then have it work and then you go again back to the user. So it fits in that framework.

Jon Krohn: 01:05:01 Yeah, great discussion there. And I think that, ultimately, for me at least, it seems like all of the historical research suggests that these kinds of things, while the work changes, while we need to be adaptable as data scientists or entrepreneurs to this fast-moving AI ecosystem, ultimately, all of the automations historically, and I mean, sometimes people are like maybe this time is different, but any other historical automation has led to more jobs than fewer. And so based on that historical precedent, it seems like this AI transformation that we're currently undergoing will simultaneously lead to more jobs. And that is what we're seeing. It could be other economic factors that are involved potentially right now, but it is interesting that at this same time in history, that we're seeing AI proliferate and advance at a speed never seen before. Simultaneously, we're seeing some of the lowest unemployment rates in decades or ever in economies all over the world.

Rasmus Rothe: 01:06:06 And I mean, we also have to keep in mind that for many roles, I mean, we have a lack of people just doing the job. I mean, for a lot of lower scale jobs, for a lot of rural areas, it's very hard to sometimes find doctors in the

countryside or people in the customer support at scale. And so people struggle with that, also with a lot of geopolitics, there's more reshoring, nearshoring again. So people are bringing maybe some processes back to the country, to the US or to Europe, and we need a lot of people for that. And we don't have them. I mean, we're making two little babies. In that sense, also with the baby boomers all retiring now, there's high demand for more people and workforce and we just don't have it. So the only way we can even just keep our current system running is supercharge the people we have that work with AI. And so that's why it's really important to keep society going in the next decade.

Jon Krohn: 01:07:09 And I guess we see that in places like Japan where they have one of the oldest average ages, one of the smallest workforce to retired population ratios. They also have, I believe, the highest rate of robotics adoption.

Rasmus Rothe: 01:07:24 It's the same, it's like, for elderly care, do you want to have a robot caretaker? I don't know. But do you want to have a robot caretaker rather than nobody? Probably yes. And maybe at some point, we like it more. We don't know yet. I mean, that takes some time adoption, depends on how good it is. Sometimes I think we also need to face reality here, what we are right now with global society.

Jon Krohn: 01:07:48 It's an interesting point. I mean, so you asking that question, you think, do you want your elderly parent or grandparent to be taken care of by a human or a robot? Maybe today you say the answer is human because that feels like you're doing more of the right thing, they have more interaction. But it could very well be the case that in the not too distant future, maybe even today in specific circumstances, you could have a robot that is actually way better than a human because let's say, somebody has advanced Alzheimer's, a human can't have the patience to just be constantly reminding about the same

things, whereas a robot can have infinite patience and can maybe do a much better job even today in that kind of scenario.

Rasmus Rothe: 01:08:27 Yeah, and is never tired and is always in a good mood and is always reliable. I think it needs to a certain point of just accuracy. And then I think it also works. And also, I mean, if there's not enough people, we don't have a choice. I think it's the same for customer support. I think that's always a great example. 10 years ago, I mean, I hated chatting with these customer support bots because they were so stupid. I mean, the language, one. Now, I mean, sometimes I don't really know anymore who I actually talk to if it's a LLM, more a human because the LLM start to get so good.

01:09:01 And I mind it, actually, less because I know if the LLM's solving my problem, then it's great. So I think it needs to hit a certain accuracy. And then also, if the waiting time to get to a human operator is 45 minutes, I mean, maybe even more fine with taking up with the chatbot, so I think it's just a matter of time getting there for most applications to get to this accuracy and also get to the availability we have.

Jon Krohn: 01:09:29 I think Alan Turing, when he was thinking of the Turing test, he was very fascinated by the customer service need. And now we have-

Rasmus Rothe: 01:09:38 A [inaudible 01:09:38].

Jon Krohn: 01:09:39 Yeah, exactly. You're exactly right. I mean, when I'm speaking to a customer service chatbot, especially in the last 12 months... I mean, like you're saying, I just said chatbot but actually, I don't even know in so many circumstances. And so the Turing test has been passed, which interesting implications for just how we monitor AI because for so many decades, it was like, well, this is the

benchmark of humans having the same kind of capabilities or a machine's having the same kind of capabilities as humans, and now we see, well, actually, that particular use case that the Turing test was designed for ended up being one of the things that we were able to master relatively easily in AI terms.

Rasmus Rothe: 01:10:25 Yeah, and it's funny, because now, I mean, if an LLM has read more data than a human could ever read in their lifetime, and you suddenly can create, actually, models that outperform humans at many things, and that's really cool. I mean, maybe yes, it's a bit scary but, ultimately, also, we have to be realistic that all the data that's based on this data that we could have seen, maybe not everything at the same time. And so maybe the AI will get new context in your reasoning and see things we wouldn't have seen between different data points. But overall, I guess, bits and pieces, we could have looked at ourselves, so.

Jon Krohn: 01:11:04 I think that, that area is one of the most fascinating for, potentially, even in 2024, us seeing some big breakthroughs. So things like the rumored Q-Star at OpenAI, where instead of just being an auto complete like GPT-4 is on knowledge on likely strings, likely concepts from things that we already know, something like Q-Star, this ability to be able to take elements and be able to combine them together into something new and draw new conclusions. It's certainly really exciting. And these kinds of ideas allowing us, again, augmenting scientists or engineers so that they can be making conclusions. So like you're saying, the LLM knows far more than the human, and so trained on a database of all the scientific literature in somebody's specialization, these AI systems maybe even of today, but certainly in the near future, I suspect in 2024, we'll be able to make suggestions on research ideas or relevant papers, experimental ideas that the human just can't possibly keep up with all the literature.

	01:12:26	And this also, a natural extension of that, there's no reason why the AI model has to be just trained on the scientific literature in one vertical. It can be across all verticals. And so all of a sudden now, you can have this machine that is pulling ideas from lots of different traditionally siloed verticals and making suggestions maybe even on who you could be collaborating with. So there's huge, huge augmentations of human intelligence that I think these kinds of examples are going to be happening very soon if they aren't already today.
Rasmus Rothe:	01:13:05	I think we just need to be modest as humans that, ultimately, I mean, we have limited brain capacity, we have limited data we can take in and put out, and there will be just areas where machines will be better, quicker, faster. And that's cool. Let's leverage them and let's have an impact.
Jon Krohn:	01:13:24	Wow. Well, that was a fascinating discussion, I think, particularly, at the end there for me and hopefully, for a lot of our listeners, it's amazing to hear your journey, Merantix's journey, which really... even though it's eight years in, which seems like forever in AI terms, I think, by far, the best is yet to come. There's so much more potential in the ecosystem that you're building. And so fascinating to hear about that. And then I love, love, loved how the conversation has gone into these longer term, more philosophical discussions on how AI will transform the workplace and life as a human. So thank you for those amazing insights, Rasmus. Before I let my guests go, however, there's a question that I always ask, and that's for a book recommendation. Do you have one for us?
Rasmus Rothe:	01:14:11	I think one book we talk a lot about at the office, it's like I think two years old, is Super Founders, by Ali Tamaseb and a few others. It's about a more data-driven approach to what founders are successful and what are not. So I

think whenever we discuss a founder and we're unclear about whether we move forward, then somebody in the office pulls out some data from this book and is like, given this book, actually, even though you might not think, but this kind of trade is actually found in a lot of successful founders. So I think it's just a cool book to read. And so for anyone, I guess, investing or maybe also looking for co-founders, it's good.

Jon Krohn: 01:14:55 Yeah, or trying to figure out what skills maybe to develop in order to be a great founder yourself. Fantastic recommendation, Rasmus. And for people who want to be able to follow your thoughts, and I do highly recommend that Rasmus is certainly someone to be following on social media because it's wild, the people that you're bumping elbows with regularly, the influence that you're having on AI entrepreneurship and policy in Europe and around the world is incredible. So how should people follow you after this episode, Rasmus?

Rasmus Rothe: 01:15:31 I think LinkedIn is great. I mean, Twitter also works. I use LinkedIn more. So add me, send me a message. And I think the other thing is check out into the Merantix AI Campus, register for the newsletter there. And if you're in Berlin, those of you who want to come to visit the campus, let us know, or as you said at the beginning of the episode, hundreds of events happening every year, so just come to one event and that way, you can also connect with our community.

Jon Krohn: 01:15:56 Fantastic, Rasmus. Thank you so much and thank you for taking the time. It's been an awesome episode. Maybe we can catch up again in a few years and see how the adventure is coming along.

Rasmus Rothe: 01:16:07 Thank you so much, Jon. It was a great discussion.

Jon Krohn: 01:16:15 Incredible to have Rasmus on the show and to hear how he's paving the way for so much AI innovation in the coming decades. In today's episode, Rasmus filled to sit on how the best AI founders demonstrate tons of drive, entrepreneurial flare in an area of specialized interest, whether in machine learning or a particular industry. He also talked about how to raise a good amount of venture capital, you need to show traction with paying customers, have defensible intellectual property or product market fit that shows you have more value to customers and a ChatGPT Plus license. You have to show founders have experience in the space and focus on a specific vertical instead of trying to boil the ocean horizontally across all industries. And he also talked about how people who work across fewer modalities and have fewer in-person interactions are more vulnerable to disruption by automation, while jobs that have physical interactions so would require robotics, not just software, will be more difficult to displace in the coming years.

01:17:08 As always, you can get all the show notes, including the transcript for this episode, the video recording, any materials mentioned on the show, the URLs for Rasmus's social media profiles, as well as my own at superdatascience.com/751. Thanks to my colleagues at Nebula for supporting me while I create content, like this Super Data Science episode for you. And thanks, of course, to Ivana, Mario, Natalie, Serg, Sylvia, Zara, and Kirill on the Super Data Science team for producing another phenomenal episode for us today. For enabling that super team to create this free podcast for you, we are deeply grateful to our sponsors. You can support this show by clicking on our sponsor's links, which are in the show notes.

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Show Notes: http://www.superdatascience.com/751