SDS PODCAST EPISODE 997: HOW THIS AI STARTUP HIT 20M USERS (NO MOAT)

Jon Krohn:	00:00:00	Imagine being able to create full-blown video games using natural language alone and for free. My guest helped engineer a platform that allows you to do exactly that seamlessly and already 20 million people have played games through the platform. Welcome to episode number 997 of the Super Data Science Podcast. I'm your host, Jon Krohn. My returning guest today is Dr. Andrey Kurenkov, one of my favorite guests ever on the show. Andrey is a founding AI lead at Astrocade, a Bay Area based startup that has raised $68 million in venture capital to create the TikTok of video games where creators create games for free and you play them for free as well. In this episode, you'll hear all about Astrocade's recent astronomical growth as well as unique insights from Andrey based on his experiences host of Last Week in AI, the wildly popular AI news podcast, as well as from his PhD in machine vision and robotics from Stanford.
	00:00:54	This is such a great episode. Enjoy. This episode of Super Data Science is made possible by Anthropic, Excel Data and Cisco. Andrey, welcome back to the SuperDataScience Podcast. How you doing, man?
Andrey K.:	00:01:07	I'm doing good. Yeah, thanks for having me again.
Jon Krohn:	00:01:09	Oh, it's so cool to hear your voice in real life because I'm listening to the last weekend AI podcast all the time. As regular listeners to this show will already know, it's the only podcast that I listen to. Keeps you up to date on all the AI news and your voice is just as rich and fascinating in real life.
Andrey K.:	00:01:25	Oh, well, I hope so. I wouldn't
Jon Krohn:	00:01:27	Want to
Andrey K.:	00:01:27	Mislead people.

Jon Krohn:	00:01:28	Thought it might've been AI? No.
Andrey K.:	00:01:30	Not
Jon Krohn:	00:01:30	AI.This is really Andrey's voice. Yeah.
	00:01:33	So last time you were here on the show, which was episode 799 and we're now ... Oh, it's so funny. I think this episode's going to be 997. So we just moved to seven around. Nice. Yeah. Back then in the olden days, your startup that you worked at, Astrocade, it was pre-alpha. It was closed off and you were hoping for maybe an alpha by the end of that year. Now you have over 20 million engaged users. Wow, that's wild. Tell us about the product for people who didn't listen to that episode already and what it's been like over the last 18 months over the last two years as you have this crazy increase in users.
Andrey K.:	00:02:11	Happy to. Yeah. Astrocade, the elevator pitch is a TikTok of games where you can make games with AI, vibe code, publish the games and people come and play them. So the majority use cases actually for people who just come to play these casual mobile type games. And as you said, we've seen some amazing growth in the last six, eight months where we both have a pretty rich community of people making games. People who obviously in most cases are not game developers. They haven't made games before. We don't really know how to code, can't make assets, but empowered by AI and by Astrocade, they are really making some great stuff that a lot of ... Some of these games have millions of plays, hundreds
Jon Krohn:	00:03:01	Of thousands of people
Andrey K.:	00:03:01	Playing them. Yeah. Wow. So Astrocade I think is a very exciting proof point that AI can be empowering for people to express themselves creatively, which I think is the ultimate goal is not for it to create AI slop that replaces

		human creativity, but instead it allows people to harness their creativity to make stuff that they otherwise could not.
Jon Krohn:	00:03:26	And it's a mobile app or is there a desktop version? It's a
Andrey K.:	00:03:29	Mobile app. It's a website. You can go
Jon Krohn:	00:03:31	To
Andrey K.:	00:03:31	Astrocade.com, check it out.
Jon Krohn:	00:03:33	And right now it's open. Anybody who's listening right now can go, they can make their own game, they can play games. How do they monitor? What do you pay for a subscription or how does that work?
Andrey K.:	00:03:42	Yeah. So fun fact, it's free to make games on. We are making good use of our VC money by making the tokens free, at least for now, I won't make promises. But yeah, you can go and start making games and you can make as many games as you want, as many AI requests as you want. Now we do have a bit of a room for improvement where if you are really engaged and go to our community Discord, we have a little bit of a exclusivity to the top end of the AI. But yeah, anyone can go, anyone can start making games and playing games.
Jon Krohn:	00:04:23	So it's free to make games, it's free to play.
Andrey K.:	00:04:25	Yes.
Jon Krohn:	00:04:26	So you're basically, you're expanding right now, you're just trying to-
Andrey K.:	00:04:29	We're doing the tech model where the VCs pay for things and then we'll figure out how to make money later.

Jon Krohn:	00:04:37	Okay, great. That's really cool. I love that. I'm going to have to check it out. I do have some game ideas. You must have been making games.
Andrey K.:	00:04:45	I was, yeah. I mean, I wasn't a serious game developer by any means. I've played around with it going back to high school, middle school, I
Jon Krohn:	00:04:52	Think. No, but I mean, that's all interesting, but I mean in Astrocade, have you made games? I
Andrey K.:	00:04:56	Made many games.
Jon Krohn:	00:04:58	What's your favorite game that you've made?
Andrey K.:	00:05:00	Oh, I spent forever, even early on I was making this Tetris version where if you complete a row they explode and then they turn into little physics blocks and fly around and settle. So yeah, I would say that's one of my favorite. Also, one of the very early ones I'm now remembering, I made Miaosical Maestro.
Jon Krohn:	00:05:25	A good Meowsical Maestro?
Andrey K.:	00:05:26	Yes. Which is what we call a meme game, which is like not a traditional game. It's sort of a joke game in a sense where all it was was like images of cats and you can tap on a screen and they start howling in a cat type sound and you can increase and decrease the pitch.
Jon Krohn:	00:05:45	Okay. I probably won't be checking that one out. So
Andrey K.:	00:05:48	Those are some examples. I will say in recent months I haven't made as many and I wish I could be making more. But one of the things that if you were to go and try to make games, you find out is like, yeah, the AI can write the code for you and it can generate the assets and sort of do the brute labor almost, but it still takes a lot of work and

Jon Krohn:	00:06:12	Effort to make it something good.
Andrey K.:	00:06:14	To make it something good or if you have an idea in mind, a vision in mind that you want to realize, AI can't do that for you. You have to work with AI to get there.
Jon Krohn:	00:06:25	Are there games in the platform that other people have created that are particularly popular or particularly surprising? What stands out for you as some of the best user generated games out there?
Andrey K.:	00:06:36	There's a lot of them. There was one I can remember that's recent where it's a doom type game but with a Barbie theme. So you have like these dolls coming after you and you have to shoot them with this glitter gun. It's very memorable because just the look of it. The assets that AI generates our.
Jon Krohn:	00:06:59	So
Andrey K.:	00:06:59	It's
Jon Krohn:	00:06:59	Not just like side scrolling two dimensional stuff or you can render 3D games like Doom.
Andrey K.:	00:07:05	Yeah. Well, in the sense of Doom from the '90s where you have these
Jon Krohn:	00:07:09	Sprite
Andrey K.:	00:07:10	Type things, but you can do Roblox type graphics. We don't currently do 3D model generation, but you can actually upload 3D models and it'll just make games of that.
Jon Krohn:	00:07:20	Oh, wow.
Andrey K.:	00:07:21	Yeah.

Jon Krohn:	00:07:21	That's cool. Very, very interesting. And you guys have been doing really well. So you talk about burning through VC money, you just got a whole bunch more to burn through. So you had an unusual round because it was jointly announced as a series A and series B. I've never seen that before. Yes. And there's lots of well-known names, big VC names like Sequoia and then names that everyone knows like Nvidia, Google, but also a big gaming distribution giant. I guess that's C? Is that what they're ...
Andrey K.:	00:07:52	Sorry?
Jon Krohn:	00:07:53	Yeah. What's the big gaming distribution giant? Oh,
Andrey K.:	00:07:56	Guerrena.
Jon Krohn:	00:07:56	Guerrena.
Andrey K.:	00:07:57	Yes.
Jon Krohn:	00:07:57	Yeah. I see. I don't know the gaming space very well.
Andrey K.:	00:08:00	Yeah. It's a giant over in Asia. We have one of the most popular games, I think Free Fire. So yeah, it is an interesting Ray's story and I think the reason we have done this kind of announcement is timing, I suppose, where the Series A was about a year ago in 2025 and we were then in, I don't know if you call it Alfalbera, we already had some activity but we were still small. And then the more recent raise ... And by the way, I just want to make clear to our VCs that you are not putting money on fire. We are making good use of the money.
Jon Krohn:	00:08:44	I'm sure this is the strategy that they have outlined for you. I'm sure they're aware that this is happening.
Andrey K.:	00:08:50	We are making good use of the money and we appreciate the money and we have great VCs. Yeah.

Jon Krohn: 00:08:55 It's just comedy people. It's comedy. VCs have humor, right?

Andrey K.: 00:08:59 I hope so.

Jon Krohn: 00:08:59 It's not like investment baggers.

Andrey K.: 00:09:03 I wouldn't know. I'm not the finance guy. I'm just a tech guy. But yeah, the more recent raise happened post our sort of explosive growth and so it kind of just made sense to group them and have it be the story of the last year and change where we got to a point where you have a platform that has millions of games users, thousands of games and is still growing.

Jon Krohn: 00:09:34 Really cool. Your title has shifted over the past couple of years. And so there's two journeys actually that maybe we can kind of cover in one chronological sweep. So I think that you starting, your company rather, starting to work on Astrocade and doing this kind of like vibe coding for video games, it predates certainly lovable being popular or these other kinds of vibe coding platforms being popular. So you guys were working on this vibe coding platform before it was popular and then you within that ecosystem, your title has shifted from ML Scientist when we recorded the last episode to founding AI Lead. So yeah, how has the company transformed? How has your role transformed as the company has grown and gone from just developing behind the scenes to now having tens of millions of active users?

Andrey K.: 00:10:25 Yeah, it's quite the story. I joined in April of 2023 just after finishing my PhD at Stanford where I was actually doing machine learning and robotics. And initially that ML scientist label made sense. My background was in machine learning and I was going to be working on the AI side of things, but we sort of shifted that label a little bit because ultimately it's not machine learning to build agents or to do prompting. Machine learning, you need to

understand machine learning and what is involved, but a lot of it is understanding bigger systems of prompting context engineering and just generally the more hands-on practical problems of building something that works rather than being scientific of doing research. So I think my title shifted just to reflect the nature of the work itself. And yeah, in that three years I joined April of 2023, the company as a whole started on this direction of building basically what we have now, which is a user generated content platform for games back in February of 2023.

00:11:43 This is like two months after ChatGPT came out, I think two, two and a half. So at the time we had LLMs, we had LMAPIs, but they were still stupid relative to today, right? They're not anywhere where we used to be. So the idea of straight up code generation, one of my very early things at the company was actually experimenting with code generation and they could already write little small functions and so on. And I remember even back in 2023 when ChatGPT was coming out, people were demoing, oh, it wrote Pong and it was mind breaking or some website. But as anyone who's followed AI over years can probably tell relative to today, going back to 2023, LLMs were much more limited in many ways of hallucination, reliability, general intelligence, and certainly being able to write code that actually works and has no bugs.

Jon Krohn: 00:12:41 Sure. I mean, it's really, I would say, and I've talked about this on this show a lot and with guests and I'm sure it's the kind of thing you've been talking about with Jeremy a lot on the last week in AI podcast, but it's really since February that we have reliable text to code generation with the Opus 4.6 release embedded in the CloudCode environment.

Andrey K.: 00:13:03 I mean, I think I'll be a little more generous. I think people have come to realize and wake up to it more since February and it's one of the interesting things where I

remember our company, we adopted CloudCode basically everyone starting in about June of 2025

00:13:19 And I still remember CloudCode came out around, I want to say February of 2025. So the realization that these LMs were now able to do coding has been sort of brewing. I think Andrey Kapafi coined the term vibe coding in early-ish 2025. So it actually just hits the one year mark since the term itself has been coined. And what really happened was that this entire type of product and experience matured, right? So CloudCode came out very quickly, the people kind of down in their minds doing the work with Cursor, realized, whoa, this is actually on another level relative to just Smart Auto Complete. And I remember kind of seeing the hype and like not being sure if it's actually that different. Then I tried it and like a few days after trying it, I was telling everyone in the company to start using cloud code.

00:14:21 But as you say, I think this year since February, January, as the new models came out, it's just gotten better and better and more and more reliable. And I'm sure at some point you've talked about the Meta time horizon eval or whatever where-

Jon Krohn: 00:14:40 Oh yeah, the meter thing. Yeah. I mean, I talk about it every single talk that I give, I have a meter chart in the first few slides and actually I was just recording the episode that'll actually come out next week with Chipoian, episode 999 and I talk about the meter charts in that with her. So yeah, it's definitely, I mean, I'll have a link to meter in the show notes, but basically it's just showing this crazy exponential increase where like with Methos it broke the meter ... Yeah.

Andrey K.: 00:15:15 You can no longer evaluate how long the task that AI can reliably do because the tasks are too long and it's hard to evaluate. So yeah, it's been a progression where there was an inflection point about a year ago where it got to a point

where they could do tasks if you were babysitting them and they could write code and it now is getting to a point where they can do it without you babysitting them and that is another sort of shift that is on top of vibe coding as a thing.

Jon Krohn: 00:15:48 Yeah, it's wild. What can you tell us? I mean, you kind of just disclosed one thing there that's happening behind the scenes at Astrocade, the CloudCode usage, obviously without divulging anything that would be an issue publicly. What else can you tell us about what it's like behind the scenes in terms of the tech stack building a platform that is generating games being used by millions of people?

Andrey K.: 00:16:12 Yeah. I'm not entirely sure how much my CEO and CTO want me to say, but-

Jon Krohn: 00:16:17 You don't need to say much that.

Andrey K.: 00:16:19 I will say, I think the truth is there's no secret sauce fundamentally, right? There's an agent, it has some tools. We use an LLM. It's all the standard ingredients. So the ingredients aren't special, but the way you mix them, the way you put this whole thing together is kind of a tricky part. So you need to ... We have a lot of effort to benchmark and to evaluate the way we do our harness, the way we do our prompts. And it's actually a very challenging problem to benchmark because it's one thing to benchmark like a multiple question answer test where you know the answers. When your task is like implement this Tetris crossed with a merge game that also has like a puzzle component, there's like a million possible answers. You can't even do anonymous judge because we have LMS- At least

Jon Krohn: 00:17:16 One million possible ways of doing that.

Andrey K.: 00:17:18 At least. Yeah. So the key to what we do behind the scenes is the finer points of how you put together VLM, the prompt, the tools and make it all

Jon Krohn: 00:17:33 Function. Yeah. I can't even imagine how tricky that would be. This is the tricky thing I think that still provides a moat for product designers across the board, which is that when you get into any particular niche like this, there's tons of opinionated bets that you make as a development team, as a product management team and some of those are going to be wrong and you get that through having good user feedback metrics, you can kind of learn, "Okay, going in that direction was the wrong way, let's try this other way." And then over time, over many years you accumulate, okay, we've kind of gone in the right direction overall and that gives you a moat. Yeah.

Andrey K.: 00:18:14 Yeah. I think you learn a lot and we have learned a lot over the years. One thing you've learned over time, and I'm still a blog post just detailing all the many things we've learned in doing this over a few years, but one of the things you learn is you have to be very careful around scaffolding around AI in the sense of as we were starting out in 2023 and even in 2024, you couldn't do vibe coding yet. So we had to come up with a way to let people make games where the AI was helped out by some sort of structure, which we can call scaffolding. And so it took these preexisting pieces and it put them together and made things you could use in the game, but then you hit 2025, you get to a point where you could do vibe coding. All that scaffolding now is limiting you as opposed to becoming more powerful.

00:19:05 So one thing that we are very mindful of is building in a way that it is very future compatible. You want to build your system in such a way that when VLMs get better, two months from now, three months from now, whatever you built isn't outdated. And it's one of these tricky things

where I think probably in startups and research and everything, you learn over time that you have to know what to keep things simple and really deeply understand how to leverage technology and build something in a way that's compatible. I don't know if that is actually interesting, but it's something I've had to learn the hard way.

Jon Krohn: 00:19:49 Yeah, yeah, yeah. No, it makes a lot of sense. Really exciting that you're doing that work. Something that surprised me in the research that we were doing is Sequoia, which is one of your investors, Sequoia's David Kahn said that your best users, I don't know what best means, maybe active or engaged. I don't know. He says your best users are women age 20 to 40 and that you're really competing with Instagram for time, not other game engines because of that demographic. That's kind of surprising to me. Maybe I shouldn't be surprised.

Andrey K.: 00:20:24 I think it makes sense. It's surprised. Video games, you associate less with women 20 to 40. And I think what he means there is we do have a sizable portion. I wouldn't say the majority necessarily, but a lot of the users, the people playing games and some of the people making the games are women in their 20s to 40s. And what you find out once you get into it is actually that's like a preexisting thing. So we are in more of a casual mobile space where you play simpler games. It's not like video games like GTA, whatever, right? You don't use a controller. It's more short form kind of relaxing or entertaining, just fun games. And it turns out that even before whatever we are doing, mobile games have become a thing over the past decade and it is actually just popular with women

Jon Krohn: 00:21:20 And

Andrey K.: 00:21:20 With women in their middle age. So in some sense we haven't invented that in any way. We just are providing

another avenue for people who already are into this kind of thing to have even more opportunities to enjoy it.

Jon Krohn: 00:21:36 That's cool. I wonder if also, well, no, it's not for me to speculate. I'm not going to go down that road on the show. Something that you talked about the last time that you were on the podcast on this podcast was that B2C was ill-advised for a startup that why Combinator and most investors want B2B because consumer depends on network effects. You guys Astrocade went hard B2C and it seems to be paying off.

Andrey K.: 00:22:04 It is paying off now, but it did take us over two years to get there. And maybe that's why I was saying back when I was there we still haven't gone there. Yeah, B2C is tricky because the upside is very, very large, right? Instagram, YouTube, Google, these are all B2C if you want to call them B2C. So our hope is to be Instagram sized. It's to be hundreds of millions of users and you can only do that with B2C. And the reason I join Astrocade, and I think the reason we are doing what you're doing is at least in large part in advised sense from like the business strategy is, it's hard. It's a very uphill battle to get those initial users and to build a product that's compelling to consumers. B2B, you're solving a problem and then you're talking to individual businesses and you're selling them on it.

00:23:02 And so it's easier in many ways to be like, "Okay, I've solved your problem and now I have these several businesses that have a problem and going to talk to them." In what we're doing, we need to make something that's fun and that is fun enough that you would do it on your phone instead of going to Instagram or YouTube or TikTok. There's a lot of competition in the entertainment space. So that's one or a couple of the reasons I probably said that early on, but as I kind of started talking about the reason we are doing this is in large part because B2C is also very exciting, you're building stuff that people,

millions of people are using. We're making something that lets people make fun things and enjoy fun things that for me that's like, what more could you want?

Jon Krohn: 00:23:51 One other thing that I love about B2C working when it does

00:23:55 Is that if you lose one user, it doesn't matter. You have tens of millions of them. So these kind of overall trends, you've got to keep an eye on them, but you can get great data on what's working, what's sticky. You can AB test really well and so you can figure out, you can iterate over time and build that more and more and more and more. And it's hard for people to take that away from you. Whereas you can end up in a situation as a B2B startup, you could end up getting one or a couple of these big like landmark enterprise clients initially that account for so much of your ARR of your revenue that losing one of them is like this huge deal. So then even worrying about losing them can end up being a big deal in your mind.

Andrey K.: 00:24:44 Yeah. And then you might be secretly a ChatGPT wrapper and then ChatGPT just goes up and eats you up as I'm sure has happened to many AI startups.

Jon Krohn: 00:24:55 Yeah, for sure.

Andrey K.: 00:24:56 The other thing I'll say on B2C is I suppose a subset of B2C, which is kind of UGC side of things where we have a platform- UGC? UGC, user generated content.

00:25:10 So we are a platform, people make things on it and people then experience and consume those things. And that is fun in a way where we do have a moat technically where we have advanced AI and all the kind of magic and benchmarking and so on, but the ultimate moat is having users and with UGC, the ultimate moat is having people making good things. Right now we have a community Discord. Discord is where people come together and chat.

I forget what size it is, maybe 50,000 people or something. We have like deeply, deeply engaged creators who spent hours. Again, I just want to emphasize that the AI is there to let people accomplish their vision, but it turns out to really do that, you need to be very skilled and you need to put in the work. And one of our moats as of now I would say is that we have a community of creators where we now have people who have been there for months making games and have gone really good and kind of encourage each other, talk to each other, provide feedback.

00:26:21 And it's another reason why it's really fun to work at Astrocade.

Jon Krohn: 00:26:25 Really cool. I love that. And one of the ways that you're keeping these tens of thousands of highly engaged people engaged and this is definitely not burning through VC money. This is very well allocated capital strategically, you have a $10 million creator incentive program in the mix. Tell us about that.

Andrey K.: 00:26:45 Yes. So as you imagine, if you have people spending hours and hours and hours and putting in a lot of work making these games for people to enjoy, the dream for us would be to make it viable for people to do that full time or actually make it part of their living as is already the case in Instagram and YouTube and TikTok all these platforms. And so as you say, we want to thank our VCs for helping make that possible. We now have this $10 million set aside and already being paid out to users in a very straightforward way. If you make a game that people really like and a lot of people play, we pay you per play. Wow.

Jon Krohn: 00:27:31 So as well, so it's actually, not only is it free, but you can actually make money.

Andrey K.: 00:27:36 Yes.

Jon Krohn: 00:27:36 That's really cool. Yeah. In terms of strategy, we've got a B2C, UCG

Andrey K.: 00:27:44 UGC.

Jon Krohn: 00:27:45 I was trying to think of another TLA three letter acronym that I could throw in there as like the overall strategy here.

Andrey K.: 00:27:52 Bibe coding.

Jon Krohn: 00:27:52 I don't know if you,

Andrey K.: 00:27:53 I guess VC is taken, but you

Jon Krohn: 00:27:55 Can

Andrey K.: 00:27:55 Throw something AI in there.

Jon Krohn: 00:27:57 No, I was trying to play with some kind of idea of like what the overall strategy is here for you in terms of where are the platforms going and how VCs can eventually get a good return on what they're doing. But it's really obvious that this idea of incentivizing creators allows you to get a flywheel of high quality content being created, get more users in there and then long term, once you have lots of people's attention, there's ways you can monetize that. So cool.

Andrey K.: 00:28:26 Yeah. We'll get there soon enough. Don't worry

Jon Krohn: 00:28:29 VCs'll get

Andrey K.: 00:28:30 You your

Jon Krohn: 00:28:31 Money. Nice. It's in the bank, guys. Nice. All right. In preparation for this episode, I read through recent blog posts on the Astrocade website and there's a post recommending user generated games, maybe the hardest problem in modern Rexys, so recommender systems. And

so that's something I've worked at a bunch of startups where the big machine learning problems kind of like a matching problem or getting the right information in front of our users at the right time. What is so hard about recommender systems and games?

Andrey K.: 00:29:10 Yes. So it's hard I think because it's a fenaminally different type of media from, for instance, video and most recommendation system stuff is either video like Instagram, Reels or TikTok, or you can have text if you're doing search, right? So with search, you want to get the user the right thing that they click on. With video, you want to give them something that they watch and like. And so you can have very clear metrics of, okay, this person watched this whole thing end to end and they stuck with it and so this is correct. With games, a lot of time there's no endpoint, right? We don't know if you finished it or not and maybe there's no way to finish it. If you spent a minute playing a game, we don't know if you spent a minute playing a game Because you want to experience it or because you're confused and you're just giving it a chance, but ultimately you dislike it.

00:30:09 So the signals there are much harder to parse to train an algorithm to do that. I would say in comparison to something like TikTok where if you're watching it beyond 10 seconds, you're probably interested and you want to see more of that type of content. And beyond that, games are also quite complex in the sense of they have mechanics and they have loops and they have ... How do you say two games are similar? You can say the genre is similar, but even these small tweaks make it a different experience that one of these things you like, one of them you don't like. So I think it's difficult for a couple of reasons. The Rexis part is difficult because a lot of what's been done hasn't been done for Vis domain of games. And the ways you do it have to be different because the data and the ways people engage is different.

	00:31:07	So we are working hard on trying to figure out how to do that.
Jon Krohn:	00:31:11	I bet. It's certainly tricky things would be you have a new game, no play history. How do you decide quality, genre? There's so many ... Yeah, be complicated. I can see why it's a tricky problem. One of the ways that you're helping people make better games regardless of what genre it is or what style is you have something called the Astro Academy. Tell us about that.
Andrey K.:	00:31:35	Yes. AstroAcademy is our not very formal but semi-formal schooling curriculum where we actually have a set of classes where you learn the ropes of how to make a game from start to finish. And this is going back to that note of yes, the AI is writing the code and making the assets, but there turns out to be a lot more beyond that. And if you were just to go there and enter a prompt, RAI is not bad, but RAI is not likely to get you top tier content of a sort that really gets millions of plays on a platform. So AstroEconomy is our structured way to let people who want to make games and join Astrocata and become creators kind of quickly learn all of the tricks of a trade that we found out are tricks of a trade as we've been doing this. It's now about to enter season free is what I think we're calling it.
	00:32:37	We've had multiple iterations now where every time we've learned what helps people, how we can make it easier for people to learn how to do this.
Jon Krohn:	00:32:45	So is it like when you say seasons, that basically means that it's like a refresh of the curriculum or does that mean ... D people follow along with the curriculum in real time in a cohort or is it like a video series you can take on anytime?
Andrey K.:	00:32:59	It's a bit of both. I think we post the content online, but it is a cohort based kind of real time program. So this is the

third iteration of it where we are continuing to iterate on the lessons themselves based on people who have gone through it before and how it has gone and so on. So I think this next one is the most mature, the most advanced, hopefully the most effective way to learn how to make games.

Jon Krohn: 00:33:30 Until season four.

Andrey K.: 00:33:31 Until season

Jon Krohn: 00:33:33 Four. For people, it's a great resource. I'll find a link to the Astro Academy to put in the show notes, but for people who would just like right now kind of want a summary of some of the biggest tips. Do you have some instinct yourself? I realize that you're not a full-time game developer, you're developing this ecosystem, but maybe you're aware of some of the tricks as to what makes a great game.

Andrey K.: 00:33:57 Yeah. Well, I've tried to make many games over months and years, so I'd like to think I can say some things. One thing I'll say is it may be easy to kind of miss that ultimately it is a creative endeavor. So the sorts of things that typically apply in a creative endeavor of you need to have an idea in mind and you need to sort of pursue that idea, have a hunch of what this should be and then start working towards it and kind of explore and iterate until you get to something that feels good. So that's number one is create it as a creative endeavor where you want to make something compelling. Then after that, there is a very basic thing which is give it to our people to try out and see if you might think it's fun but it's not actually fun and practice.

00:34:58 Those are some of the very fundamental things and beyond that, play games, enjoy our stuff and let inspiration strike you and follow that inspiration.

Jon Krohn:	00:35:09	Cool. Great tips beyond having these academies for people to learn and having a great setup that allows this vibe coding to be so effective. It seems like if we haven't already talked about this already to some extent, let's dig into it a bit more, but it's clear that a big part of the success of a platform like this is that like TikTok, like YouTube, Astrocade allows you to follow people, to be followed. And so I think that that creates ... When you are a creator, when I create a podcast episode, when I create a post for LinkedIn, I'm hopeful that people are going to like it, that it's going to get some reactions, get some comments, that it's not just something that they scroll right past.You're hoping to create something that's of value to people. And so it seems like having a follower's following setup, allowing that kind of engagement within Astrocade, that must be a big part of the success.
	00:36:11	So yeah, what do you think allows Astrocade to now have tens of millions of users? Do you think it's these social elements? Do you think it's the quality of the AI? Or I guess the answer that you're probably going to have is that it's both.
Andrey K.:	00:36:24	It is both. It is both.
Jon Krohn:	00:36:27	It's okay, moving on.
Andrey K.:	00:36:29	No, to the point of following and followers, I think what that gets at is again, a core part of what makes Astroka work. And we are one of many vibe coding platforms and there's other even game specific platforms out there. But one of the things we've learned having been doing this for years, even going back to our pre-alpha days is you need to nurture the creative community, you need to treat it as something that people get good at and the creators are not disposable, they're not just there to enter a prompt. They're people who actually make it work and AI is just about to let them do it. So you do need following subscribing and then following because there are now

dozens, maybe even hundreds of people who have made five, 10, 20 games and have a certain style and a certain set of things that they like to do and keep getting better and better.

00:37:34 So I do think that this is something that is very likely to happen, similar to Instagram, similar to TikTok. If you like one game by this person, you will probably like their next game and you'll want to see that next game and we definitely want to enable that.

Jon Krohn: 00:37:47 Yeah. It's interesting to think that as a creator in the Astrocade ecosystem, people must, I mean, I'm sure to some extent people are like, "Oh, I created a Tetris style game. Now I'm going to make an RPG style game and now I'm going to make a first person shooter." And to some extent you probably, because it's so easy, you might want to experiment with different kinds. But I bet it also ends up being the case that certain kinds of creators really specialize in a niche and that they over time figure out how to create better and better games. When you were last on my show, one of the hottest takes that you had was AI as a product rarely works, but AI as a feature does. And now it seems like Astrocade is about as pure AI as a product as you can get. Yeah.

00:38:35 What do you think about what Andrey said two years ago?

Andrey K.: 00:38:39 I don't think our product is AI. Our product

Jon Krohn: 00:38:42 Is

Andrey K.: 00:38:43 Games, right?

Jon Krohn: 00:38:44 I see. So the social platform is the product and-

Andrey K.: 00:38:47 The social platform. Yeah. Most people don't go there to make games. It's actually a very small percent of people who make the games

	00:38:54	Similar to TikTok, Instagram. Right, right, of course. So the vast majority are playing the games and I still to an extent stand by that. So obviously Anthropic, OpenAI, et cetera, their product is AI. They are selling the LLM, but aside from these relatively few giants and at this point if you want to compete with Anthropic or OpenAI or Google, I mean, good luck. You don't want to be selling a chatbot. You don't want to be selling like a wrapper, right? This has been one of the things that has been pretty clear over the past few years, but if AI can be part of a solution to something and you can provide extra value on top of AI or LLM, I would say Harvey is maybe one good example, right? One of the breakout successes where yes, we are using OpenAI or Anthropic, whatever, but there is a domain specificity there where they can configure it, tune it, put it together in the right way to make it useful.
	00:40:03	So I think that take holds up.
Jon Krohn:	00:40:05	Yeah. Harvey is a legal AI app for people who aren't aware of that and it is a sensation. VCs love it right now. They are. It does seem like they're ... Well, I guess we'll see.
Andrey K.:	00:40:16	I can't speak for lawyers, but
Jon Krohn:	00:40:18	It seems to
Andrey K.:	00:40:18	Have gotten quite a lot of adoption.
Jon Krohn:	00:40:20	For sure. I think it is interesting when you think about a business like Harvey, it seems like they would be more vulnerable to Anthropic or OpenAI themselves than an Astrocade would be because you guys have. You have the social network. To imagine OpenAI or Anthropic being like, "Okay, now we're going to make a social media platform for video gamers." Whereas just it being something, some future iteration instead of Claude code, it's just like Claude Law and it's kind of like their-
Andrey K.:	00:40:54	Yeah, that just launched Cloud for Legal.

Jon Krohn:	00:40:56	Really?
Andrey K.:	00:40:56	Yeah.
Jon Krohn:	00:40:57	There you go.
Andrey K.:	00:40:58	I don't want to say Harvey is safe, but I would think, and I would hope that Harvey, the reason they're not losing their minds about Cloud for Legal is they have built things that are on top of AI that makes sense and provide value to their customers.
Jon Krohn:	00:41:20	Yeah. Yeah. All right. Well, I think I'm ready to move on from Astrocade if you don't have anything else there. I could move on to last week in AI.
Andrey K.:	00:41:26	I'm happy to move on. Yeah.
Jon Krohn:	00:41:28	Nice. All right. So last week in AI, as I said at the beginning of the podcast, my favorite podcast to listen to for folks who want to stay up to date on the latest news, you and Jeremy are both funny, you're very intelligent, you have different strengths, you have different opinions and so it's nice to hear these kinds ... And you argue very nicely with each other. Usually. Very polite and I learned so much. I have a smile on my face when I listen to it. You're now five plus years in over 300 episodes. Every weekend when you release it, it is still pretty much two hours, which is like the full recording blog that you and Jeremy have set out.
Andrey K.:	00:42:10	Yeah. Lately, multiple times I had to run off to actually go to work because our standup is right as we finish recording and Jeremy kind of finished up last two minutes. So it definitely is one of our ongoing challenges of taking as much time as we have every time.
Jon Krohn:	00:42:28	Yeah, exactly. But there's a lot to say obviously in the AI world and that's part of how you're so up to date on these things going on with Harvey and Claude for law. And I'm

sure when I listen to that episode, I'll be up to date as well. How has that changed over time? In the past two years, even when you were on the show two years ago, we talked a lot about AGI and how it's going to change the world. Do you think that your perspectives have changed over the past two years or do you think the way that you deliver the world's most popular, I think, AI news show, what's shifted over the past two years?

Andrey K.: 00:43:08 I think the shift has been kind of the ... I don't know if I would call it a shift, but it's been growth, right? I think ChatGPT, we started this podcast and originally Jeremy wasn't on it, but I started it in March of 2020. It was like right before COVID, which is crazy to think about. So over 60 years ago. And so for first couple of years we were doing it. I was a PhD student at the time, so we were talking about AI news and into time it was deep learning and we had GPT free, but it was like inside baseball, right? Nobody heard of GPT-free. VanChatGPT came out and it suddenly became a normal thing that normal people knew about outside of academia or tech. But it's easy to forget that even in 2023, a month or two after ChatGPT, most people probably hadn't used it.

00:44:09 It did have exposed to growth, but it didn't reach 900 million users or whatever it is in 2023. Over the last two years, we've seen the continual expansion of AI into everything where every single product has AI features, everyone kind of ... It's in the culture now where you can joke about the tone that ChatGPT has or kind of the AI slop that sometimes permeates media. So if I had to pinpoint a change, I would say we focus more on things that everyday people can interact with. We start up every episode talking about tools and updates to ChatGPT and updates to Claude, whereas previously it might've been more business focused or tech focused

Jon Krohn: 00:45:01 And academic papers.

Andrey K.:	00:45:02	Yes. Yeah.
Jon Krohn:	00:45:03	Yeah. You still do cover those things though.
Andrey K.:	00:45:05	We do.
Jon Krohn:	00:45:06	Yeah. You have sections, you make sure to cover it all, which is part of why it takes so long. I think it's so easy in the first section to have some stories that feel so important and so revolutionary that you need to dig into them a lot and then you're like, wow, we still need to do academic papers and business and art and all these things. Yeah,
Andrey K.:	00:45:20	That's a nice way to put it is we are very strategic about spending our time where it matters and not just like bad at time management. I think that's fair.
Jon Krohn:	00:45:30	Yeah, exactly. It's been pretty funny. The times that I've co-hosted the show, you will have created before we start recording a spreadsheet of the topics to cover and that leads to a Google Doc that as the recording goes on, you without even talking, you're just deleting sections from later on. I'm like, okay,
Andrey K.:	00:45:55	This story we can probably
Jon Krohn:	00:45:57	Skip.
Andrey K.:	00:45:57	It's okay. Yeah. That does happen quite often. I
Jon Krohn:	00:46:00	Bet. I bet. One of the topics that you guys mentioned on the show, of course, that gets coverage as well, which is very intimately related to AI but isn't necessarily directly related to AI. You could have robotic embodiments that don't involve AI, but today I'm sure pretty much every time you would, just in the same way that you probably wouldn't create a software agent without having an LLM in it today. Why would you handicap yourself in that way in creating some kind of agentic approach? So robots are

a big thing. And last time that you were on the show, you said that residential robotics was a big problem holding back residential robotics is that the robots are too strong and that they're buggy, so they could be dangerous. And so what's changed in robotics? I know that that's a subject area that you have interest in beyond just a news item.

00:46:52 And so let's spend a few minutes talking about robots and what's shifted where you see things going.

Andrey K.: 00:46:57 Lots to talk about robots and a lot has shifted I think in the last two years and it's maybe something that people are not as aware of unless you listened to them last week in AI. There are multiple humanoid robotic startups led by people who have been researchers at OpenAI or Google, whatever, like deeply, deeply skilled people working on a problem of humanoid robots. And if you've seen any clips of robots, you probably know that outside of demos from Boston Dynamics, whether they do Kang Fu or Parkour or whatever, they can't do even basic chores. But one thing that honestly surprised me a little bit is the amount of progress in human robotics we've seen over the past two years. The people working at these companies of 1X and Figure and several others have taken the basic technologies behind LLMs and adopted them to a embodied setting with things like video action language models, I think VLA, video language action models.

00:48:10 So to me, there's been a surprising amount of progress towards general purpose robotics. And that was really the challenge always is we had AI for robotics, I did machine like traversal planning. We even had autonomous driving back in 2024 already. Waymo was already servicing customers, but to do human robotics, you just need to do everything all at once. You need to do perception, you need to do motor control, you need to do common sense reasoning. And so I've been impressed by, obviously you

		want to take the demos with a grain of salt, but it seemed like human robots are making much more progress than I might have expected. And the question of whether you'll have these like household servants assistants who do chores for you, who do laundry, who do the dishes, I think it's now quite possible that technology is going to be there within, let's say two to three years.
	00:49:16	Two years ago, I probably would have said a decade. Now I think it's closer to few years.
Jon Krohn:	00:49:20	Wow, that's a big difference.
Andrey K.:	00:49:22	And it's more of a question of economics at that point of like, does it actually make sense to have a robot that costs $50,000 to do dishes for you? I probably will not pay for that. I would do the dishes myself, but yeah, it's a very exciting moment in robotics in a way that unless you're kind of following this area, you might be aware of.
Jon Krohn:	00:49:44	Really cool. Thanks for that robotics update. And then in terms of the apocalypse coming, singularity, artificial superintelligence stuff, as we talked about on the show last time, one of my favorite quotes from you that I have recycled in a million different ways paraphrased probably plagiarized word for word is one of the things you said, I don't even know if you remember this, maybe something you think about a lot, but you really stuck with me was this idea that it's not going to be as good as we hope it might be. It's not going to be as bad as we fear it might be. It's just going to be somewhere in the middle. There's still going to be problems in the world, but we'll be able to solve some of them. We're going to create some new ones. You probably still feel the same way today.
Andrey K.:	00:50:27	I think so. I think in some way it might be a cop out answer where like it's probably not either outlier. It's probably somewhere in the middle. Yeah,

Jon Krohn: 00:50:36 But it's simultaneously banal, but also it's an important thing for me to reiterate in my head because it's so easy for our mind to roll forward with when something bad happens politically in the world, like this isn't confined to just AI stuff. When something politically bad happens or good happens, it's so easy to be like, wow, things are going to be different forever, but it's more like it's a pendulum swinging back and forth more.

Andrey K.: 00:51:10 Yeah. On the question of generally AI risk and AI danger and even existential risk, I do still kind of have that general sense of you can never predict the future and the general question of AI risk is inherently trying to predict the future of like, how much should we be worried? And we should be worried. AI has many negative outcomes that are already being evident and will become more and more evident. And I think what you're pointing out is that it's easy to get overly focused on the extreme cases of complete extinction and miss out on the many, many more mundane but much more real and kind of like definitely applicable things to think about. So one example, scamming, right? This is one of these- That was the first

Jon Krohn: 00:52:05 One that came to mind for me. Exactly.

Andrey K.: 00:52:06 Now we've talked about some new stories. I'm sure we can't even imagine the amount of scamming that is now powered by AI. This is not something that if you were to be like, "Oh, what is the number one risk of AI in the next two years?" Two years ago, I don't know if you would say scamming, but I would say that's one of the most harmful aspects of AI today probably. And so I think there's always this tendency we are all as humans kind of attracted to stories and it's easy to think about the most exciting story of AI, which will be Terminator or it'll be self-replicating out of machines or super intelligence, but you do need to really keep in mind all the more mundane realities of scamming of people becoming overly obsessed

with chatbots and that becoming their romantic partner and losing ability to socialize.

00:53:07 And yeah, on the positive flip side of the utopian vision of, oh, we all are going to write poetry and whatever and it's going to be great, that is the same problem of ignoring the middle ground of all the kind of practical applications and outcomes of AI that are inevitable and that we'll need to contend with and are already contending with.

Jon Krohn: 00:53:29 Yeah, really great summary there. And as usual, mirroring my opinions basically exactly, which is nice. Some great confirmation bias for me, love it. And what do you think about nuclear fusion and how that's progressing? Is that going to ... It's our get it of jail free card for everything, right?

Andrey K.: 00:53:48 I think super intelligent AI is generally ... Yeah, I'm hopeful we'll solve cancer and we'll solve all the diseases

Jon Krohn: 00:53:55 And

Andrey K.: 00:53:55 Nuclear fusion and all of our problems, but I am a SAI skeptic. I'm a skeptic on-

Jon Krohn: 00:54:05 SAI?

Andrey K.: 00:54:06 Artificial superintelligence. As opposed to

Jon Krohn: 00:54:08 AGI.

Andrey K.: 00:54:09 ASI.

Jon Krohn: 00:54:09 ASI.

Andrey K.: 00:54:11 ASI, I'm a skeptic I think and that's part of the reasons I'm not as worried about the extremes. I think the reality is there are inherent limits in physics and in computation and in science, you can't just come up and know the answer to something you need experiments and that is a

physical world. So I'm very enthusiastic about the way AI will accelerate science and we've already seen that happen with DeepMind, obviously, but I also don't think it will kind magically solve everything once it gets good enough.

Jon Krohn: 00:54:52 Sure, exactly. It's this gap. I think we were talking about this actually before we were on air, which is the risk of ... I just

Andrey K.: 00:55:01 Kept quiet.

Jon Krohn: 00:55:01 Yeah. We just should have not talked at all before the cameras came on, but there's different definitions of artificial general intelligence. Chipou Yen in the episode that we were just recording, but will come out next week for you listeners. That Chipo Yen episode, we get talking about AGI. She's saying that, I don't know, you might know this because you host a new show, that Microsoft is apparently taking OpenAI to court because they had an agreement where once AGI happens, that triggers some things that are beneficial to Microsoft in the OpenAI contract. And so yeah, lawyers are saying we have AGI. And to me, you and I were discussing how to me AGI is ... I can't imagine that it really is general if it can't do plumbing, if it can't do electrical work. It isn't good enough for me if it can do everything that you can do at a computer and that includes things that you might not traditionally think about as being at a computer like being a physician.

00:56:12 If you have a camera and maybe some other tools, a lot of different kinds of medical work could be fully automated, but if you can't also be automating cleaning someone's bedsores in their medical bed, I don't know, it doesn't feel expansive enough to be AGI.

Andrey K.: 00:56:31 Yeah. I'm going to be honest, I'm glad to discuss AGI, but I hate the way AGI gets discussed, which is there is no

definition of AGI. And when people talk about AGI, they have no definition in mind, almost always. So you can't define it in many ways, but the typical definition is just vibes. It's just AI has gone so good that it's beyond us or something. And I actually remember at one point Andreya Kapofi was giving a talk at Stanford about AGI and potentialities of it. I asked him what AGI is and his answer was, "I know it when I see it, " which is a reference to some Supreme Court case.

Jon Krohn: 00:57:16 Yeah, exactly. For most

Andrey K.: 00:57:18 People-

Jon Krohn: 00:57:18 On porn, I think.

Andrey K.: 00:57:20 Yeah. So it's like people don't have a definition. They know it when they see it and they're like, "Bat AGI." But I do think that if anything, the more kind of outcome based definition of AGI is real when the impacts of AI are such that society is fundamentally transformed. I guess probably when you know it, when AGI is here.

Jon Krohn: 00:57:50 I guess so. And then the claude code stuff, the meter ... I mean, it's not just cloud code. It's codex as well, Gemini, CLI, it's not like one company. And that also is kind of an interesting thing showing how some of the fears around artificial superintelligence and singularities that the first person to get there only has it, but it's like it just seems like there's so many players there kind of neck and neck. Anyway, it's a jagged frontier where one frontier lab might be slightly better at washing the dishes and another one is a cleaning bed source.

Andrey K.: 00:58:26 If I can, I will get on my soapbox about what AGI should be defined as.

Jon Krohn: 00:58:30 Okay. And then I think that's going to be the last we need to

Andrey K.:	00:58:33	Start- Yeah, we need to wrap up here. We've had AGI since GPD free, even before GPD free. AGI is artificial general intelligence, which is as opposed to artificial specialized intelligence. So if you can do multiple things, if you're not AlphaGo, if you're not a go playing AI, you're general. So it's a spectrum, right? There's a spectrum generality and capability and I wish people discussed it as such, but that is not the case.
Jon Krohn:	00:59:01	Yeah. I think there's ... I'll try to remember to put a link in the show notes while I'm writing down a note now to do it. So it should be there that you can refer back to my five levels of AGI podcast episode where I go over the Google Deep Mind paper. They do a great job defining it. It's very concrete what the levels are and how broadly it applies. It's a good benchmark. My favorite
Andrey K.:	00:59:21	Definition is that deeptime paper.
Jon Krohn:	00:59:23	Me too. We're the same person. All right Andrey, it's been great having you on the show again and been great recording with you again in person in San Francisco. Love doing it. Before I let you go, as you know, I always ask my guest for a book recommendation.
Andrey K.:	00:59:40	Yeah. I wonder what my previous one was. This time I'll go with one I'm currently reading.
Jon Krohn:	00:59:46	I can actually tell you what it was last time.
Andrey K.:	00:59:47	Oh, let's see.
Jon Krohn:	00:59:47	Because I brought that up. It was House of Leaves.
Andrey K.:	00:59:50	Oh, I was tempted to say that again
Jon Krohn:	00:59:52	Because I do think that's
Andrey K.:	00:59:54	A great book. But the one I'm currently reading or whatever listening to Which is Red Rising. It's a science

fiction book about this somewhat far future Martian society. It's fiction. If you like sci-fi and you like socioeconomic commentary and just good old fashion engaging storytelling, I really like red books so far.

Jon Krohn: 01:00:27 Nice. All right Red Rising. Thank you for that recommendation. Other than the last week in AI podcast, how should people be following you? I think it's actually kind of tricky. I can't even tag you on LinkedIn.

Andrey K.: 01:00:39 Oh, well I wish I probably should be using it more, but I'm on Twitter, Andrey karankov, Twitter/X and otherwise I guess listen to last week in AI.

Jon Krohn: 01:00:52 It's great for sure. That is the best way I think to know what Andrey and Jeremy are up to these days. Thank you so much Andrey for taking the time out of what I know is a super busy schedule for you. Really appreciate you doing that. And yeah, hopefully we can catch up again on air sometime soon.

Andrey K.: 01:01:08 Yeah, thank you for having me.

Jon Krohn: 01:01:12 Exceptional episode today with Dr. Andrey Karankov. In it, he covered Astrocade, of course, which he describes as a TikTok of video games where anyone can vibe code a game with AI, publish it and have other people play it, and which has now grown to over 20 million engaged users. He talked about his view that there's no secret sauce in the tech stack, just an agent, some tools, and an LLM, and that the real difficulty is mixing those standard ingredients well and building so your scaffolding doesn't become obsolete the moment the next model lands. He talked about the surprising pace of humanoid robotics from companies like 1x and Figure, leading him to revise his estimate for capable household robots from roughly a decade down to two or three years, with the real holdup now being economics rather than capability. And he told us why he's a skeptic on artificial super intelligence since

physics, computation, and the need for real world experiments mean AI can accelerate science enormously, but can't simply think its way to every answer.

01:02:08 All right, 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 Andrey's social media profiles, as well as my own at superdatascience.com/997. Thanks, of course, to everyone on the SuperDataScience Podcast team, our podcast manager, Sonja Brajovic, media editor, Mario Pombo, our partnerships team Natalie Ziajski, our researcher, Serg Masís and our founder Kirill Eremenko. Thanks to all of them for producing another stellar astronomical episode for us today. For enabling that super team to create this free podcast for you, we are deeply grateful to our sponsors. You could support this show by checking out our sponsor's links, which are in the show notes. And if you ever want to sponsor an episode of the podcast yourself, you can find out how at Jonkrohn.com/podcast. Otherwise, please help us out by sharing this episode with someone that would love to learn more about five coding video games.

01:03:04 Subscribe if you're not already subscriber, review the show. I can't tell you how helpful that is. If you do that on your favorite podcasting platform or on the YouTube videos and most importantly, I just hope you'll keep on tuning in. I'm so grateful to have you listening and I hope I can continue to make episodes you love for years and years to come. Also, very special thing if you've listened this far into the episode, you might love to know that we are doing a special live recording for episode number 1000. That is coming up. This episode was released on June 2nd and we're going to be doing this just in two days. So if you're a dedicated listener listening to episodes all the way to the end, you're getting a special surprise. Come join us on June 4th at 5:00 PM Eastern time, 20 PM Pacific Time.

01:03:58 To get the signup details for that, you can go to my LinkedIn page. We'll also have it for you in the show notes to check out to go directly if you don't want to go to my LinkedIn page for some reason. I posted about it a week ago on May 28th there. So yeah, hopefully see you for episode 1000. We're going to be doing live recording. So Kyle, the founder of the show, Kirila Ramenko and I will be there and we will do a little history of the show and then we will be available for people to come in into the podcasting platform itself. So you can use the chat functionality to chat in real time with so far many dozens of people have already signed up and you'll also have the opportunity to kind of knock and come join us. I don't know if we'll be able to do that with everyone that comes joined.

01:04:50 It seems like a lot of people are going to come, but some people will get to come on live with video and ask us questions or make comments in real time celebrating 10 years of this show. So yeah, looking forward to doing that with you. I always sign off as I'm looking forward to enjoying another round of the SuperDataScience podcast with you very soon. And yeah, for episode 1000, you will be able to do that. June 4th, :PM Eastern 20 PM Pacific. Come join us again, the details are in the show notes and via my LinkedIn page. All right, catch you soon.