

PRONOJIT

0:01

Hi everyone. I am Pronojit, and welcome to another episode of Deep Tech Musings Podcast, a show where my goal is to get actionable and tactical insights to take your deep tech startup from zero to one. I'm thrilled to have with me today Ritu, who in many ways is changing the game in the world of deep tech investments. She is the cofounder and managing partner at Unco Capital, an early stage venture capital firm founded in 2014 that invests in digital and deep science technology companies. Ritu, great to have you here today. How are you doing?

RITU

0:36

I'm doing great for my teeth. I'm very excited to be here and speaking to a community that finds deep tech passionate. So thank you for having me.

PRONOJIT

0:46

Awesome. So we are going to talk a lot about deep tech and the deep science technologies vertical that you initiated at Anco Capital and want to start our discussion with the founding story of the same. Can you tell us more about your motivation towards initiation of this deep science technologies vertical at Anco Capital?

RITU

1:09

Yes, thank you. So, Pranajeet, we are actually a venture capital firm. We invest in early stage companies and over the last five years or so, a couple of companies ~~is~~ came by our way and actually made it into our portfolio and they were very deep science companies. And that sort of opened us up to start thinking about that a bit more. And about a year, a year and a half back, you know, we launched an initiative called Text Sprouts. And the idea there was to engage more deeply with the deep science community. Entrepreneurs help develop an ecosystem that is conducive for more deep science startups to be coming out of India. So that really is the crux of the story. I myself actually am originally used to be a scientist. I have a PhD in physics. I'm very excited to see some of these science startups emerging and building out of India.

PRONOJIT

2:14

Got it. In fact, Tech Sprouts is a very knowledge rich source of repository that I found around the deep science aspects, information and everything. So I definitely encourage everyone to check that out. I'll put the links in the show notes. So the next aspect I want to discuss is how do you define deep science to begin with?

RITU

2:42

Yes, that's a very good question. And I'm going to put my investor lens on because if somebody told me this deep science, I would be like, what is that? **1s** Exactly. So really for us, what that means is that **2s** there is an innovation out there **2s** that's when somebody has come with, there is a strong IP moat around the invention, the innovation that **2s** can be protect the technology as it grows commercially. **1s** And that the innovation, the invention is addressing a large pain point or a gap in the world. So that's roughly how we define the deep science companies. And they're different from a regular digital company of which there are lots of startups because they have a very different journey. And so upfront for us to have this visibility in terms of the USP of the invention of the innovation is important and that forms our definition.

PRONOJIT

3:59

Okay, and what are the kind of technologies that you typically see those innovations in?

RITU

4:05

Yeah, we've seen a broad range from synthetic biology to battery chemistry to bioinformatics. So there is a wide range materials. We don't invest in therapeutics, but we do see a lot of that as well.

PRONOJIT

4:25

Got it. So many people also when we talk about deep tech, look at some advancements in AI and maybe IoT crypto as well. So are you also considering those as in your purview of deep science technologies or that is something that you consciously keep out?

RITU

4:47

Yeah, so that's why we kind of added this word science, because we realized that a lot of the deep tech is also talking about some of the areas that you mentioned. It's not that we won't look at the areas. I think our definition is that what is the IP **2s** that presents itself? I mean, there is science and AI. There is science in any of those **1s** robots, et cetera. It is more about **1s** the intellectual property mode that can be built around some of these innovations. And that's the definition.

PRONOJIT

5:26

Got it. So can you highlight few of the portfolio startups that you have invested in? What are the IPS that they're having? What are the problems they are solving?

RITU

5:37

Yeah, I think we've got a slew of six companies, I think, in our portfolio at this point of time. So, for example, we're invested in a synthetic biology company called String Bio. And String uses waste gases like methane and **2s** microbes to convert that into proteins. So their products are useful for

feed, they're useful for food, they're useful for agriculture and specialty materials as well. So the crux of it is the process **1s** and the biological systems that can convert methane to these proteins. And that's the IP that the company works with. There's another company that we're invested in, which is, again, a synthetic biology company. And what they've done is they've looked at how enzymes work in cancerous cells and they've been able to reengineer the multiple different enzymes and reduce the number of enzymes and create their own enzyme mix here that allows you to do diagnostics, either bacterial or viral. And they can tune into whichever bacteria or viral that you want to detect. And now that we're all familiar with, RTPCR come up with sensitivities of around that, right? So, again, the IP and the boat is around this enzyme that they've developed and the potential to do more of those. That solves the problem of point of care detection with the accuracy of lab tests.

PRONOJIT

7:18

Sound good? This is quite unique as you are detailing them out. Can you highlight a few more?

RITU

7:23

Yes. So, for example, we're also invested in a battery chemistry company and they work with zinc. And so it's a zinc gel. So there are lots of advantages to zinc gel, where one is the technical parameters that make it good for storage or for fast charging EV battery. At the same time, it's abundantly available and it also comes in a gel form. So it's fairly robust here. So, again, **1s** the IP is around the chemistry here that allows these features, which obviously are important things in the market, to be delivered. We're interested, we invested in. **2s** In a breast cancer detection company, and they actually are an AI company, and they work with thermal images allowing them to detect breast cancer very early in all sorts of different kinds of tissue with similar accuracy levels as mammography, but huge benefits of lower cost being nontax, non radiation. All of those things are benefits for the customer. And not to mention that a lot cheaper to be able to deliver to the patient and more comfortable. So again, a lot of IP around the AI algorithms that allow for detection of tumors. So here these are some examples of the companies

PRONOJIT

9:05

that's really a unique set of startups and it's one thing to invest in them and I think it's another thing to have such a unique group being attracted towards an investor or a VC outfit as well. So what makes Ancour Capital one of the best place for such deep science startups?

RITU

9:25

Thank you for that question. Project **1s** the answer to the question is that I think we have a team and we have a network of people who **1s** actually come from a deep technical background, but in addition to that have also gone through commercialization of the technologies and the challenges and the issues that come up **2s** as you bring the solutions to market. **1s** So I think what Ancore brings to the table is the experience of having done that before and so being able to help guide and aid a

startup both internally as well as externally from their networks of technology. Folks who built 1s have brought products to market.

PRONOJIT

10:14

Right. And for someone just starting out in this space, that's a very deep value proposition to have like a Kickstart or Fuel to your growth in the early days with such technical folks around.

RITU

10:28

Yeah, 1s I think it's important to because most people who start such companies are coming from a scientific background for the innovations that they've done and they don't typically have they haven't been through a commercialization journey. So to understand what's in front and what it takes to take something from lab to market 2s is, in our opinion, definitely a very important component. Yes,

PRONOJIT

10:57

a very strong point indeed. Next, I want to get your viewpoints on some tactical advice for founders who are listening to this episode. So what would be your advice to the entrepreneurs who are looking to take their startup from zero to one in the deep science domain? What would be the top three things they should consider or some mistakes to avoid from your experience that you have gained across in this industry?

RITU

11:29

Yeah. So I think one thing that comes out as important in this space visa with the other entrepreneurs that sort of exist, it takes a long time to do research and come up with a product, right? Basically. So 3s if you want to turn this into a financial, commercially viable venture and bring that market, the product to market, I think it's important to assess that the solution. It's a long journey, right? So it's important to address that the solution changes the status quo dramatically, not just a tiny bit, because it's very hard to get people to change their existing way of working. So there has to be a pretty big pain point that it is addressing or there's no solution there, or you need to think about that. And the second so it's important that you talk to people who can be potential users of this technology to get that feedback early on, because otherwise it's a long journey. It's not like I made a red colored app today and tomorrow I'll turn it blue. It doesn't work that way. So I think that is one part of it. I think the other part about it is that 2s things may work in the lab, but if you are keen to actually make this product in the market, 1s it is also worthwhile to think about upfront the pitfalls that may come for you to scale this up. So I'll give you an example on the lab scale, it's very easy to buy speciality materials or chemicals and things like that. 1s Now, if you are very dependent on those and let's say that you are going to produce this at 1 million tons, obviously I'm talking about manufacturing plant, right? It is important that you design and you think about how can you do this at a million tons in a way that would make sense. You can't buy this from a research catalog and you anymore. So to give the thought that if your technology is going to be commercially there in the market, the scale at which it has to be there, the 1s manufacturing it or making it would make sense.

So these things are part of the design thinking that has to go in upfront, it can't be close to having done all the research.

PRONOJIT

14:00

Got it. So I completely hear on the aspect of the long gestation periods, which is very pertinent across deep tech startup ecosystem, what do you think are some of the ways in which startup founders can derisk that long gestation period for deep tech startups?

RITU

14:21

So there are two parts to the long gestation. One I think you can't derisk and the other one perhaps you can, right? So the first part is the basic research part of it all. The only derisking I can think of there is that you tie in to get as much grant capital as you can to support that and support you through this process. But I don't think there are shortcuts around the core work. If there are shortcuts, there's very little value in what you're doing because in the market there isn't much value to that. Right. So that I actually don't think you can derisk that short of trying to find capital to support you through all of this. Right. And you have to be passionate enough and usually most researchers are passionate enough about it to go through that part of it. All, right? The second part about it is also to just think about the technology that you're working on. And there I think again, *1s* if your technology can become more of a platform. *2s* Then you have a shot at different use cases. If your technology is very, very narrow, you know, the rates are higher basically. So that's one way that if it is possible and not to say that there aren't technologies that are one shot solution that haven't been amazing. So I don't want to discourage anybody, but if you are thinking about derisking, if there is a way that you can the technology can address multiple applications, then that just gives you that many more chances of actually getting it adopted in the market.

PRONOJIT

15:57

Got it. And so following through that idea in a way so we should target also maybe a problem space which is large enough so that you can pivot around within it from say, one tech to another or one idea to another.

RITU

16:14

I think one idea to the other is a difficult problem in this scenario. One application to another application is what I would say. Right. The idea is back to the lab bench then.

PRONOJIT

16:28

Agree. Got it. I also want to just have your thoughts on the last thing that you mentioned around scalability. How do you assess scalability early on? What are some of the aspects that startup founders can look into?

RITU

16:46

Yeah, it's a good question and we actually spend a bunch of time trying to figure that piece out. Right, so ultimately there's a solution that is targeted to the market and we have a view or we talk to the market and get a view of at what price points with this solution be acceptable. Let me just take a battery, right? I mean, I'm sure you can produce a battery that is \$10,000 for a kilowatt hour or whatever, but the market is not going to pay for that. So at the lab scale, that still might be numbers that you're working with. But **1s** if an investor is to make an investment, this has to serve a very large market. So they will look at the fact as to whether that price can come to a point that the market will adopt it. **1s** So **1s** the journey from what you are at at a very minuscule scale to what you would be at large scale, what does that require? So, for example, if you're making some esoteric battery and you tell me you need some weird mineral or something like that, that means you will need to go **1s** on the volume of those minerals being produced is not enough to meet the volume of the demand. It would mean you need to go discover some mines. That's obviously very difficult. Right. But if it is just something that is being used normally somewhere else, you have a rough idea as to what the prices were done or whatever. So then **1s** you could kind of figure out what the benchmarks would be and whether you're close to what is necessary for the market to buy. And yes, of course you may still have to work on it, but you get closer. So that part of it is how we take a look at the scale up. Right. We also look at saying what does it take to and again, I'm talking about a bit more things that go into manufacturing. It's less relevant in the AI type kind of companies. But then **1s** do you have to discover manufacturing from zero? Or there are they allied industries that have done this for a while and you could pull in some of the engineering needs, et cetera, from there to create what you do. So these are the kind of things that we would evaluate to figure out whether the commercialization and the techno commercial journey is something that is feasible.

PRONOJIT

19:15

Okay. So the experience of having done it before and having that technical know how to figure it out, I think that really helps here to assess. And that's one of the value propositions that Ankur also brings. So on the aspect of user research, I want to understand your views. Do you see many deep tech companies engaging in user research? Because many of them are researcher led and researchers are by inherent nature more towards on the lab and they want to just stick to the experiments. Right. So what's your view on that? How do you see that in the industry?

RITU

19:54

I see that as a problem, sorry. **2s** Ultimately **3s** lots of friends were researchers and it's okay to be a research officer and that you have to decide what you want to do. Right. So I'm not saying that you change your research skills, but I think you need to bring in the business or the market or the customer skills to test whether what you have works or doesn't work. Right. Because. **2s** Nobody's coming to buy your innovation. They are coming to buy a solution to their problem. So you've got to understand whether your innovation is a solution to their problem or what you need to tweak to make it a solution for their problem. But if you don't do that, then I think then all bets are off. So this is a fundamental piece here. **2s** Okay, sure. Because I have been in this bucket. Yeah. So I was a researcher, and I thought I'd develop the best things in slice bread. And I worked for a company that

was nice enough to tell me, okay, fine. Looks interesting. Why don't you come and help make it happen, which included figure out whether you can manufacture it, figure out how much it will cost, all that good stuff, and also then go figure out whether the customer likes it. ^{1s} And they did a lot of customer consumer testing, and so they were very nice and said, go sit on the custom thing. Take your product out there and go and ask the people whether they'll buy it. I sat in a room with, like, five, not 515 ladies, and they told me it was horrible. There was no way they were going to buy what I had made. Right. So that was a little jarring. Right. Because, of course, you'd done all this work, you solved problem statement that you had been given. So I was like, what's wrong? But you said you wanted this. And then they pointed out 30 other problems. Okay, this doesn't this is not how I like it. This doesn't smell good. I mean, all sorts of things, like, none of them, which had been the problem statement to start with. Right, but so when you go through those journeys, when you go through sort of actually on the customer side, you realize that. ^{2s} There's a lot more to it. Right. And that if you don't do the lot more, if you're passionate about innovations, you have to address the customer's problems. If you don't address the customers problems, your innovation is not going to make it in the market. So my thing to most researchers and most innovators are that if you're that passionate about what you've made, you need to put in the other pieces and adapt that to what the customer wants for this to be really valuable in the market.

PRONOJIT

22:34

I love that story and thanks for sharing it. I think this is a pivotal point where many people actually falter in this space, ^{2s} let

RITU

22:44

me tell you. It's not nice. Right. I mean, the game spent so much time. This is your life, right. In many ways. Right. And I still remember a woman who said, what rubbish is this? Why are you giving it to me? Literally, ^{3s} it is a jarring situation, but it is the reality that you have to accept.

PRONOJIT

23:06

Yeah. So one thing I tell a few of my starter firms in such season is go find a founder, co founder who is not a researcher and let him take care of all the things.

RITU

23:18

Absolutely. That's somebody that you can be that thing. That is what I said earlier. I don't think the researcher needs to change their skills. Yes. They need to recognize that there are other things necessary and they need to find the co founder or the team member to bring those skills

PRONOJIT

23:36

in. Very strong point. Great. I want to come back on one of the aspects we touched upon early in on a conversation around modes. Now, you mentioned the startups having IP around some of their intellectual properties and all. So what are your views on how to build those IPS or mode in deep science products?

RITU

24:01

So typically in deep science products, 2s typically research is talking about an innovation that they have made. Right. So it is typically differentiated. It is much easier to talk about the differentiation in these type of products than it is like in a software product. Because at the end of the day, those are much more copyable. Right. In many ways, the long gestation is also the moat in some respect is what you've done. But the thing that I would caution against is that just because you're have IP doesn't mean you have a mode. Right. Because IP, I like to think about IP ASP. Again, there are exceptions. There are single patents that have protected companies for centuries or hundreds of yards. But typically IP needs to be defensible just because if you have a patent, that doesn't make it defensible, right? And the thing that I was taught here on this whole piece was that, look, if somebody were to go encroach on your IP in the market, you are successful company, how would you know? If you cannot tell, then your IP is not very defensible, right? There should be a simple way in which you can tell. And some IPS are easier, others are harder. So typically people look at a suite of IPS to protect their innovation. So it's like building a carpel with saying, I'm going to build many walls around this so that you can't get in from this side, you can't dig under, all that kind of stuff. So that's one thing. It's also geographic protection, so that you have 2s some other country doesn't come along and sort of do it. So I think IP is actually a fairly complex topic and it does depend. And sometimes you just don't do IP around what your core innovation is. What you do is a ring fencing around it, but you don't disclose the core, right? So IP is a full fledged topic in itself that we can go on ours. My thing to entrepreneurs is that you need to think about how that mode gets built. Please use help, talk, sounding bots, et cetera. One pattern is not enough, it's how you think about the

PRONOJIT

26:18

protection. I think the very idea of ring fencing protected core is a very valuable action, actionable advice that the listeners would take away and definitely something to think more. Thanks for that. Let now gets a bit forward thinking. I want to learn more about some future initiatives that have been planned at Anco Capital, especially in the deep science space.

RITU

26:44

Yeah, I mean, we're going to continue textiles is going to continue its activities. We hope to also be holding a bunch of sessions with entrepreneurs. So, for example, I just said IP is a neat topic. Maybe we get some experts along to sort of talk about some of these areas. So there's a learning and 1s entrepreneurs have kind of gone through their journeys, their experiences that are a little further along that can help entrepreneurs up earlier. So these are some of the things that we have in the pipeline to help kind of promote and build the ecosystem for entrepreneurs in this

PRONOJIT

27:22

space. Got it. And what are some of the future opportunities in deep science domain that you wish startup would capitalize on?

RITU

27:31

Oh, lots from a jeep. I mean, there are so many problems. We have all this climate problem. We have a lot of things. We have food, health, lots of challenges, right? So we're excited. One of the areas that I'm excited about is sort of the intersection of biology, 2s computational advances that have been made, maybe some engineering principles, right? And I think there's a lot to be done in that era to address various things, right? From food to 1s health to maybe even energy. Right. 6s There's a lot of computational advances here that can just help us redesign and rethink 1s how perhaps some traditional 2s processes or systems have worked. 3s There's a lot of 1s CRISPR type things that are happening globally which also offer a potential on how we can attack various problems, 1s material innovation. So it's a pretty wide swath of stuff for asset ankur. We're interested in energy, we're interested in food and agriculture, and we're interested in health. So in these areas, again, diagnostics 1s simplifying diagnostics, especially for markets like India where fancy labs, et cetera are all nice, but to get to the larger population, it needs to be different. That's again, an interesting area.

PRONOJIT

29:08

Got it. So lastly, who are some of the thought leaders in this domain, apart from you, that listeners can perhaps follow and maybe we should have on this show next? And how can listeners of this podcast be useful to you and Uncle Capitol

RITU

29:25

so Pronojit 3s people like us can't exist. We walk on the shoulders of other folks who do a lot of hard work. Organization that I'd really like to call out is BIRAC. And if I know it's more in the BioSpace, but 1s pretty much any startup entrepreneur that you turn to, BIRAC has been a supporter. They offer facilities, they offer grants, they offer multiple layers of grants to help you progress along the way 1s and I think they've done an amazing job of making this ecosystem happen. I think there's modern initiatives on the way in energy similar to this, but yet to come. 2s But there's somebody I would give a shout out to, having done an amazing job at being built in ecosystem

PRONOJIT

30:22

great. Look forward to having them on the show sometime in the near future. 1s So, Ritu, it's been amazing to have you here and I think the kind of insights and actionable advice that you have given in this 30 minutes is really action packed, I would say. And I think the listeners would definitely benefit a lot from it applying them in their startup. So thanks again for taking out time and wish a

very fruitful journey for Anko Capital in the near future. Thank you for you, thanks for having me and I hope what I said was useful for some entrepreneurs, but great job for you to doing this. Thank you. Thanks.