STD Session 7 (2)

**Karthik C:** [00:00:00] You are looking at from a wrong perspective. I will give an example. Right? I have not named the team. First team, they said, Sir, we want to work on, right? We want to work on nothing. You criticize the particular man. If I am in your age, I will do the same mistake. Right? Wrong in what they are saying, I am saying.

Just shift your thought pattern. Generally, when you talk about waste management, right, you should attack the problem at the source. What do I mean by attacking the problem at the source? I should do whatever possible to not generate waste in the first place, correct or not? That is first thing, right?

Second thing is, once a waste is created, right, it ends up in a dustbin and finally it goes to a landfill or incinerator or whatever. Now what suggestion one student made is that we will keep all CCTVs, right? The problem is, okay, if you want, in a place like Singapore, in a place like, let us say Germany, where the standard of living is very [00:01:00] high, right, I can spend the money to put something like this, where I can spend resources, energy to do this.

Let us say there is one runoff garbage or whatever source. Okay. But the fundamental, what is the fundamental problem? Lack of civic sense. Correct? It is like, uh, how can I even address the problem this way? I do not have enough collection. You are correct. Right? Hardly, once a day they will come, they will come, the garbage truck will come, collect and go.

Correct? Just what is the point of telling the municipality that there is a garbage pile here? Right? Real time, yes, you can give real time update, you can connect to IOT. All that, yes, looks fancy, sounds nice. But the problem is, you are not actually attacking the problem, right? Rather, right, uh, what Sahasrana was giving to this team is, right, if you look at it in a different way, look at the problem in a different way.

This is waste. When will this be a waste? Everything I am using is a waste. My shoe, shirt, pant, this, uh, mic. In fact, the furniture you are sitting on. Everything will end up in garbage someday, right? [00:02:00] So, what is the primary intent? To use it as long as possible. That everybody agrees? I gave a very little bit controversial idea to this case, right?

When you buy something on Amazon, right? There are third party apps which do price tracking, you guys are aware? Yes. Right? Some of you may be using it, right? Yes. Is the price going down, right? It will give a, right? It will say 70 percent likelihood the price will drop, right? Yeah. Right? It will say 5 rupees if I buy it, will it go down?

Yeah, 5 rupees, I'm happy. I've saved 5 bucks. Right? Similarly, if I buy this pen or if I buy this bottle, I'm happy. This is the waste I am going to generate, a third party. So I just take my card, copy paste it into the DAB, it tells me this is the amount of pollution you are going to make. Will that impact my purchase decision?

Some of it it may. Right? I am not saying this is a solution. Right? This is one way to think about it. You attack the problem at the source of waste generation. I am not saying this is how you should do it. You flip the coin and [00:03:00] then think about it from where the waste is generated. Often you'll find, right, they'll say, this bottle is made from 60% recycled to plastic.

They'll not define what is recycling. Often what happen is, right, at least I, my company, what they used to buy, I'll tell you, when you make this bottle, you'll end up getting some waste. They will take that waste within the same factory, put it back into the machine and say, recycle. Is it, is it the definition of recycling?

No. What? In a way, it is true. He is recycling. But it, that plastic itself never left the facility. But as far as the, right, when they report to the government what is recycled, they will say 70 percent, Coca Cola will claim, right, 90 percent recycled water, all the thing, we are recharging the well, all the story they will tell you.

But net, if you see, they will be actually taking it out. Understood? Right? So these terms like recycling, these are all like companies exploit these terms just to, it is a feel good factor. You see, Right. Recently I bought a pencil, made from 90 percent recycled plastic. [00:04:00] I don't know. Right? You pay 100 rupees for a pencil, and it says nothing, I know.

He is using some, uh, you know, words just to fool you. Got it? So, the point is, right, don't say, don't force AI, don't force image processing, right? You can use that, but leverage it. Right? Use it in a different way. Right? So I am not giving you a solution per se, but rather how to take and how to attack the problem.

So what is the fundamental tenet? What is the fundamental requirement? Attack the problem at the source, always. Right? If you fix there, you do not have to go all the way downstream and then wonder what to do with it. Right? One common thing is, right, or if you are talking about, if you are talking about, right, waste management, right, one common problem is at the downstream.

Waste segregation. Even today, it's still a big problem. Why? What do they do? If I have to recycle this bottle? How will I recycle this? Think about this thing. It's got a, some plastic [00:05:00] wrap, metal, plastic. It's made of hundreds of multiple components. So ideally, if you have to recycle, what should I do? Take a screwdriver.

Little by little. Segregated. Got it. Then melt the metal. Metal can be recycled, right? China Steel, no problem. I can a hundred percent say. Plastic. No, it'll degrade. It'll go back. Plastic. Plastic inside will go back, right? All the seeds, ings, silicone seal inside, not easy to recycle. Finally, they'll turn it to and they'll mix it with the tar.

They'll put it in rot. How much can I recycle? Right? It'll let up in a landfill, ultimately, right? But generally what they do is they will crush it and then slice it into small, small pieces. So that is why I have a lot of problems, because I cannot sit. Imagine if I have one crore bottles like this, can I sit and then unscrew it, can I pay somebody to sit and do that patiently.

I can do that. How much, will you be willing to do that? Let us say if you ask me and I am asking you to do that, I am paying you. It is 2000 rupees per day. I will pay you 16, [00:06:00] 000 per month to do this job. All your job is to dismantle water bottles, right? Is it financially feasible? So generally what they do is they chop, most of the waste goes, it gets chopped and then Right?

Then, they have a multiple sorting process. They will have a magnet, any metal that is ferromagnetic, right? It will pick. Then, they will throw, they will use centrifugal force because different densities will fall in different, if you do it at a predictable rate, that is how they segregate. After it is done, right, you have an image processing thing, it will run through a camera, right?

And then finally there will be couple of people sat sitting and then they will manually sort out because the. Image processing algorithms we have are not robust, right? One recently for ITC, I, I mean, uh, just outline, I don't know. All of you have seen Sunfeast Biscuit? Yes. So biscuit, what happens is, right?

You go to the factory, they'll make, like, per day they'll make 10 lakh biscuits, 40 lakh biscuits, right? Now you bought that Mary, what is it called, Sunfeast Golda [00:07:00] or something? Mary Gold, right? Sun fish is right. Whatever.

S water, right? That biscuit. Listen, listen. Now this is remains so what they ask me, right? You have a stack of biscuits, right? What happens is when you bake, sometimes the biscuit will be non circular. Would you be okay with the oblong biscuit? Right? You circular, like what is this quality control solving, right?

So what this flow does is it's got a camera. And the biscuit will run like, that's the speed at which it will go. Okay, you have like a 120 fps camera that takes that many pictures and there is a air nozzle that will shoot and then it will blow that biscuit away, defective piece. So there is a camera here, conveyor belt, it runs like really fast, right, you have seen those videos, right, how it's made videos, right, and then I have to track that biscuit and shoot out.

Often what happens, the sink gets missed. So they have a machine from Switzerland, they said we are recreating somewhere, right, in the [00:08:00] technical thing, right. So, through some contact way, I got involved in this. There are multiple problems in this. If you see, circularity is a problem. So, you have to reject, throw away biscuits that are non circular.

You have to throw away biscuits that are little bit bigger, because what will happen if one biscuit is bigger? I never thought of it myself, right? You will have a packet and suddenly there will be a pump and, right? Yes or no? Right? Will you be okay with that? So, all this is happening in the background. I am shocked to see the amount of biscuits they reject per day.

So, again you go back to processing. How do you process so you do not end up getting this? What is the moisture content there? Food processing. How much water I should put, right? How much, uh, right, they mix, right? Some, uh, this caking agent, anti caking uh, chemicals they mix, right? INS, right? Lot of numbers they have, right?

So they are, uh, mixing so, so many things, right? There is a big mixer that was doing that. So even little bit, half a percent of, you will get all this. If the mixing is improper, you get all these problems. You understand? So, if you get into automation, right, industrial automation, right, basically kept a [00:09:00] lot of problems like this.

Pure image processing problem and syncing issue, right. Now, the question is the cameras, right, if you look at, right, that is like 2 lakhs, 3 lakhs and that camera has to run continuously. If it is a 24 hour shift, without turning off, how long can you run your cell phone camera? 10 minutes it starts heating up, right.

It is HD picture at 120 fps and the camera gets no break. Right? They will stop the length, that's when the camera can take rest. Right? So forget about the hardware. Right? Look at the software processing side. Right? I have taken an image. Right? You define a circularity, and then you have to give a deviation.

You have to put two circles from within this bandwidth, if the biscuit exceeds. Right? So what you have to do? Biscuit may end up anywhere. First you have to take, find the centroid, draw a circle, and then put what is the tolerance in and around that. Just one actual problem that I am, So that is why I am able to give you this much detail.

Right? Then within that zone if it is not there, I reject it. Got it? Pure image processing problem. Beautiful work, right? Right? So [00:10:00] we, some few things we tried out. Got the idea? So, again, this, unless you go and see it for yourself, right? You may not get it. Students, how many of you are working with image processing?

Raise your hands. Image processing, one way or another. There are some teams I reviewed, right? Image processing, if you are working, there are a lot of avenues you can still use. Right? For instance, right? I don't know how visible this will be. Yesterday, okay, we were trying to,

I don't know if you can see the video.

Can you see this toothbrush vibrate? Right? So, this is vibrating at 18 kHz. Okay? For a student project, right, we bought a toothbrush. We were trying to run through our, [00:11:00] I put the thing through my cell phone camera I tried to shoot. You used, uh, a clip of Google GCam, right? My phone doesn't support GCam, so somebody ripped off, I made it for my model.

I have a Samsung, right? Nothing came out. Then, uh, through, after some twiddling, through Samsung, I managed to capture this image. Then I understood, okay, there is so much processing going on at the back end. But Google actually fails. Google and Samsung's implementation is better, but I'm able to get a super slow motion about four AFPs.

You'll get a reasonable, that shaking thing, right. People who are working on image processing especially. Right. You have still a lot of revenue in terms of improving the computational efficiency. One thing, what is computational efficiency? Can ize email processing structuring. I told you know, image processing is what?

You are processing a n by n by n matrix. Huge matrices you are handling. Whatever you do to cut down the computational complexity, that is a source of, right? It is numerical methods, what we call numerical methods, right? I [00:12:00] you will be formally taught, right? There is a subject called numerical methods. You can look into it.

Second thing is hardware. My cell phone camera is all I have. What, can I work with this, right? So that is the second thing. Third thing, again for health, okay. I am carrying my phone, right? You can say, how do you monitor my health? Okay. Easy thing is speedometer. It tells you, you took, right? 10 years back, right?

Samsung phones had like this health app like long back, 15 years back, right? 6 3 days, right? They had this. You can, you can just fool it by keeping it on your, some vibrating thing. If it's on your car, bike, if it vibrates, it'll think, I've taken a step. Now they've really improved the algorithm, right? You cannot cheat, right?

It will not, it will not give you a false positive. It will not say, you want, when I'm not wanting. It will tell me, if I properly take this step, it's able to, right? Really look at my axonomated data. And then tell me whether I'm taking, walking up [00:13:00] a stairs, walking down a stairs. Where I am, my geolocation, so much data it is capturing without even me knowing.

Whether I am standing, whether I am sitting down, is my gait, what is my gait? Am I sitting, walking like this or am I walking like this? Just with this one. It can do that. Today Samsung is doing that, right? They don't tell you, but that is the level to which they are doing an assessment. Can you tap into that data?

Those students who are not, just use your cell phone for, Just as a lifestyle improvement device, right? Somebody said, this is well being, we want to work on that, right? The solution I gave them was, we want to punish them. No, don't talk about punishment. Talk about rewarding. Incentivizing good behavior. Yes or no?

Right? If I start punishing, how many people can you punish? How many people can you put in jail? Jails will be overflowing, no? How many jails are in Chennai? Puzhal, there is a big jail. Probably one with a capacity of 2, 000 What is the population of Chennai? One crore. One crore people can I go in prison?

Right? So, the good [00:14:00] way to attack a problem is to keep the problem from happening in the first place. So, when you try to solve a problem, guys listen. Right? When you try to solve a problem, your thought pattern has to be, how do I incentivize what I want? What is the desired behavior? Got it? If I am, if my posture is wrong, can you tell me, Right?

Through data that is captured from my IMU. This is not an IMU. Right? So, just the accelerometer and gyro from my phone. Right? All the data Google gives you. If you're on Android phone, all the data you can read. Easily. It's open. You can just tap the data and you can read. Or use Firefox. I showed you the app, right?

That'll give you a CSV. Comma Separated Value will give you. Take the data you can process. Right? So much opportunity just to leverage your phone. Got it? Or, if you look at today, what is the gold standard for image stabilization? YouTube's inbuilt algorithm. I've studied many algorithms, right? Nothing comes even close to YouTube stabilization.

What I often do is, I take a video, upload it [00:15:00] to YouTube, stabilize it and download it. That's it. YouTube does the processing for me. My computer is not doing it. So if I want an image that is stabilized, that I want digitally stabilized, what do I do? I take a video, I upload it to YouTube, literally on that algorithm, that's just a reasonably good job.

Then download a new set. Got it? Right? Stop. Those teams were struggling. Take your smartphone. It gives you a wealth of data, right through Mike, right through simple example I'll give you, okay, I'll let out a simple example. Something I'm working on, right? So one team, right? Right. What they're working on is whistle counter.

It's a common problem, right? If you're cooking three visits, you want to, you want to turn the stove up after three. What happens? Let us say you forgot. And you say, did I count it? Is it fourth whistle? Or should I turn it off? Mess up, right? So they worked on this thing. After that I was thinking, is there a simpler [00:16:00] solution?

Okay. I have my phone. I can tune my phone spike to that. Let the phone do the counting and ring. After the counting is over, my phone will ring. I don't even have to test the cooker. Right, I was thinking about the problem. So there is a solution. Right? So, if somebody, somebody who is good at writing, at writing, can do it in one hour.

Yes or no? Yes or no? You can write an app that does counting of a missile and tells you, turn your phone, keep and go. You understand? There is a problem in a kitchen space where I am leveraging simple technology. It does not even have to connect to the internet. You understand? Right? Another thing. I am talking.

Right? My throat is parched. You understand? Right? There are easily 6, 000 different parameters you can get from your voice to uniquely identify me. Not one or two, over 6, 000 parameters. Okay? That's crazy if you think about it, right? So if you look at that, right, the next speaker will come. He's got much more, uh, he'll tell you much more in depth information, [00:17:00] right?

But how you can leverage this, right? So those teams who are struggling, right, to still find problem segments, take your phone, right? Camera, your accelerometer. There is a light sensor. Read about the sensors on your typical phone. And then see, you can leverage it to do a lot of things. Right? How many times, how often am I talking per day?

Is the data useful somewhere? Right? How often is my voice, first you have to identify whether it's speech or security. Privacy is gone, but your phone is listening to you anyway. Right? Right? This consciously, right, how often am I talking? How hard is my tone? Right? Right? Whether Can I leverage that to fight some inherent medical condition?

Right parched, should I drink water? Of course I know, because, obviously, right? So, but, right? Can something else be found using this? See, for CSIS it's all data, right? How many of you have read the book Big Data? Have you heard of this book called [00:18:00] Big Data? There'll be an elephant with, uh, only one arm.

You've heard of the book? All of you should read that book, man. Please go read a book called Big Data. Big Data. Right on. Big data. The book is called Big Data. It came out like 15 years back. Very old book. Okay. Today it is ever more relevant. Okay. So, I will continue reviewing. Okay. You have to really, I understand, this course is difficult, right?

How many of you? You can be honest. This course is difficult, right? No problem. I just need your feedback. I can change my teaching pattern, man. I still have five, five classes. So, let us do this. Why is it difficult? That is like half the class. Why is it difficult? It is uncomfortable, right? The assignments are unconventional?

It is not unconventional? They are what? They are difficult. Why is it difficult? Tell me why is it difficult? You have to think a lot. So, that is hurting your brain. That is [00:19:00] the whole point. It should pull you out of your comfort zone. Yes, guys, why is the course difficult? There is no problem. Yes, right. This guy, what is your name?

Right, so he got it right. What I have been telling, the fuzzy front end, right, your tolerance for ambiguity, right, it is frustrating. This is the fourth batch. Guys, listen. This is the fourth batch I am handling, right. Please work with me. It will be very frustrating, okay. But I assure you, it will change your thought pattern, I told you.

There's a student of mine, Malish I introduced, right? He's someone who used to bunk the classes, he came back to me, and today I told him not to come, because I'm reviewing, right? I'm not taking the class. Right? Him, there's an M. Tech student who I didn't even take as a TA. He said, I will come and work as a TA, I want to learn.

Right? This course is taught as front end design, right, in University of Minnesota, in Purdue. I'm comparing notes with some of the best universities. So, [00:20:00] we have our own students. I talk to my friends in other universities worldwide. Right? The material we teach here, right, is unique to our institution.

Please understand. Right? You have to go to a university like Purdue or Stanford, where they teach this, they teach a thing called front end design. Okay? F E D, front end design. Right? So, all these concepts, right? If you want, right, maybe I will prepare a little bit of additional notes. Thank you. Okay. Maybe with the TA this weekend or next weekend, I'll sit, not just pass some time, right?

So I can help you not getting, at least give you the process. You guys are so much used to procedure, right? Do this, this, this, this, this, this, this. Right? That's not, that's not happening. That's the frustration. Maybe a little bit of right? Like more like a guide and 22 4 give you right. Next team please.

Right Guys, can you go back and work on it, right? What I will do, guys, listen. Assign my date, I will still again extend. Sunday I have put, anyway till next Thursday there is no class, I will push it to [00:21:00] next Thursday. But, but the reason is, right, because I know Vijay just made you, he's not okay with it.

Darshani, you're not okay with it. Right? KC, OP. Spend some time. OP. OP, yeah. OP, yeah. No, no. OP, yeah. What's your name? What's your name? Sorry. Sorry. Guys, no talking. They're sleeping. Why is he sleeping? I'm also, my eyes are closing, man. Why? Where is our break? Already there, man. Don't do this, man. Hey! Why? Only girls do it.

No, don't, don't, don't. Who does it? Only girls do it to guys. Girls do it to guys, huh? What do guys do to guys? Who does it? Don't do it, I appeal to you. In your case, who does it? Guys do it, guys do it. How do [00:22:00] you do it? Let me put my hand. Let me rest my hand. Hey, what are you doing? What is it? I don't know.

Private. Maybe. I'll go complain to him. That you're doing this. No. Go na. Complain to.

Are you going to Dan name? Huh? Why? Have a

couple? Yes. Me. Are you? How did you go? [00:23:00] I come with me. You going what? No. Why the fuck not? I don't know, bro. Are you an idiot? Doesn't she dance? Same. Same. Why is she not in the kitchen right now? I saw her LinkedIn post. It's a cover to say, ah, this is for girls. Some pink colour thing. All girls like pink.

But it's black. Pink is fine, man. Pink is gay. But you like it. Pink is gay, man. I don't mind it. That's how we act when we're gay. Bro, pink is gay. If you like pink, that's a whole different topic. Take a five minute break and come back quickly. Yes![00:24:00]

Hey, should we, should we get ours reviewed? No, no, no. Please, please come back in five minutes. Right, we have an external speaker. He's going to be talking about gay. Bro, we'll get ours reviewed. Please, please. At least we have time.[00:25:00]

Um, Yeah, Yeah, Yeah, Yeah. Whatever you're going on. Mm. Yeah. Yeah. Yeah.[00:26:00]

Uh, uh, uh, [00:27:00] Uh, uh, uh,

[00:28:00] Yeah.

[00:29:00] Yeah.

Yeah. Yeah. Yeah. No, yeah. Right. Very bad.[00:30:00]

Yeah. Yeah. Sound.[00:31:00]

What is happening? Desi people, they want to talk to the gadgets. The gadgets. How is, how is this? I have a feeling this towel will be a good idea. I am not shooting that. You wouldn't know. SA will be a billionaire. He has the drains for[00:32:00]

it. What can I do?

Oh my God.

We starting with, thank you, sir. No, do not please Seated.[00:33:00]

Build a bridge that barriers the bridge. Let's put a rope on it. Record from there. Or, it's recording from there. Directed towards the speaker. Is it left or right? Right. Left is Ramanujan. I think he thinks it's right. You saw him, you saw him in the old tape, no? But it's so different, no? Yes, exactly. It's so Ramanujan.

Can Amazon also deliver to you? Can you go to your laptop? Yeah. When you get here, you have to do [00:34:00] it. Just wait for Karthik, sir. It's tough. You have to do it. Sir, why did I refuse, sir? No reason. He made me play badminton. He's a starter. It's audible. No, no, no. Why is so much noise coming? So, I think you all know that I am Dr.

Raghuram Raman. So, HOD of C. D. and so, I am teaching the same course for Mechanical. So, along with Dr. Karthik. Okay. So, let me introduce this person for today's inspiring talk on AI in product design. Okay. So, So everybody is, uh, behind that AI, IoT, ML, so all that courses, right? [00:35:00] So, he has done a lot of work on AI, in the past, uh, software field for the past 20 years, and he's, uh, my close friend for the past 25 years, and he's my junior from, uh, Okay.

And, uh, so he has got a lot of, uh, inspiring, uh, areas where you can, uh, think of, okay, uh, in terms of AI product development. And now is the right time for you. So because you are, uh, trying to identify some problems. To address, uh, the social develop type, uh, requirements. Okay? So where you can, uh, use these tools and develop some innovative products.

So he'll be sharing his experience, which may be useful for all of you. Even after that, we can, uh, collaborate with him to [00:36:00] train you in certain areas if you're interested. Okay? So that note, I request, uh, Dr. Mr. Ramesh to hand this post personal. So, please be patient and listen to him. Okay? Okay? Great. very much.

Hear me silence, please hear me.

Is it at the last last. Okay, great. So, um, okay, [00:37:00] next, uh, you know, you know, maybe 45 to 50 minutes, right? I talk about ai, machine learning or data science, all are in the same. You know, areas, okay. So, uh, so this batch is all from the computer science? Yeah, yeah, they are all CSC. They are all CSC, okay, excellent.

Okay, so I hope you will be learning lot of AI in machine learning and things like that or they do only computer science? They do have some frameworks. Okay, okay, great, great. So, the PPT I have, uh, is only for you guys to read, uh, not for me. Okay. So I will not read from the PPT. I will do on my own, you know, own wordings.

Okay. So, um, so this is just a market trends, how the AI or data, uh, job market will be in the next 5 to 10 years of time. And, uh, how you want to shape your [00:38:00] career towards next generative AI. And, and, and, and now we are looking at, um, generative AI max. Okay. MAX max. Okay, so, so with that context, uh, so this is just the job mar, I mean, job market.

I have not said that. This is all told by large research firms, large research, you know, people, um, so they say, you know, the numbers, right? You know, next 10 years you will have 10 million of data analysts will be needed. In all the areas, in all the, in all the fields, not only with it. Um, so it'll have, you know, healthcare, insurance, uh, banking, financial services and whatnot.

So whatever domain that you will select, they will be having ai, they will be having machine learning, they will be having deep learning, and so on. Okay,

so let's have a small quiz, guys. [00:39:00] So. The quiz, you have to tell me what is the underlying business of that company, I will show you the logo and you can tell me the company, uh, and then you can tell me, uh, what is the business about?

Amazon. Selling goods. Okay. Selling, selling products in, you know, kind of a platform, right? Okay. It's called e, it's called e commerce, right? Okay. Okay. Search engine. Okay. It's a search engine. Okay.

Video streaming platform. Video streaming platform, okay, great, great. Just in time car service.

Okay, service platform or maybe cab booking or you know whatever, right. Uh, so these are all their business of, uh, the company, [00:40:00] okay. But what is the underlying, uh, thing is they work on data, okay. It is not, uh, When it is not an, it is not an e commerce company anymore, it is not a search engine company anymore, it is not a OTT platform anymore, it is not a cab booking, uh, things anymore.

These are all data companies, okay. Whatever logo you know or you understand, these companies are not, the business is not exactly what they are doing. They are working on data, which means. They, uh, they spent a lot of time, energy, and effort in building data barrels, in building, collecting data, in building data lakes, in building, you know, what not, right?

So in building, if you have IOT or manufacturing, they will start collecting data and so on. Uh, so all these companies now started working only on [00:41:00] data. Got it clear? Yes. No. Yes, sir. Yes, sir. Okay, great.

So a typical data spectrum, how it is evolving? It is, it is, it is a data spectrum, I will say, uh, so from, so you are born in 2000 or after 2000, before 2000? After 2000. Okay. Okay. Okay. Okay, so let us little go back beyond your, like, 95 to 2000s, okay, so 95 to 2000s, where, um, India started the globalization.

So we got a companies like, uh, Infosys, you know, Wipro, PCS, Cognizant and large companies are evolving the time. And slowly, [00:42:00] the clients they acquire, um, from 95 to 2000s. Audience Member 2. In 2005 on this topic collecting data in the legacy applications like mainframes. You have heard of mainframes?

Okay, so how does the banking operation work?

With the banks? Okay. So, the banks have mainframes, right. So, you, I mean, have you seen any black screen,

um, they will have to do a lot of, uh, you know, writing typings and so on, right? So that is called the legacy application. When I say legacy, which is very, very older technology, which, which, which, which are built by IBM and even still, IBM has mainframes. Most of the US banking operations, um, Europe banking operations, uh, they do use three mainframe [00:43:00] because of their security nature.

Okay? So, uh, you know, mainframe apart. Uh, so people are collecting data from various sources, uh, be it your banking operations, financial services, uh, insurance, healthcare, uh, retail, like Walmart and so on. They started collecting datas, so they have stored it in, uh, database. Uh, they slowly found it as datas.

When I say datas, um. We say in, uh, in a company, there will be a sales team, there will be a manufacturing, there is a marketing, there is a customer service, there is a procurement, there is a vendor, there is a purchase, a lot of things, right? So, they will also collect data in database. So, from database, we need to have a collective centralized data which is called a data warehouse.

So, after we build [00:44:00] warehouse from 2000 to 2010. Now, what happens for 10 years if I collect data, it becomes big data, right? So, it becomes big data and, uh, big data now we are talking about collecting big data in a storages like Hadoop, uh, and, uh, You know, different other, you know, cloud platforms are in place like, you know, AWS, Azure, Google, and things like this started building cloud platforms to collect these data.

And after these big data comes into picture, right, in a picture, now we call it as descriptive analytics. Company are looking at, okay, I'm collecting data. Now, now I want to make sense of my data, which is a descriptive analytics, right? I will take one scenario. So, one scenario will be the entire slide, okay.

Suppose I have, I am a shopkeeper, I am owning 10 products, [00:45:00] I am owning this shop for 3 years, right. I know the entire spectrum of which product will move which month and what do I need to have a stock, right. Because of my history in nature, now we are going to do a graphing, we are going to do a visual analytics.

Now we can say this month. Last year you sold 10 geese, 10 packets of geese in the month of September. But this is the month of where it is a festival season, where more geese we will need to order, which is predicting my sale for next month or, or, or, you know, forecasting my sale for next month, right. So by having a history of data, if I am doing a visualizing, or if I do any of the visualizing, Okay, last month you have sold 10.

Or the before the month you have sold five or the before the month you have sold seven and so on. That is my descriptive analytics. And if [00:46:00] I'm going to predict for the month of October, we will sell, you know, 20 GIS to a 20 G packets, uh, 20 oils and so on. Right? So that is called a predictive analytics.

Right. And if I am doing a prescriptive analytics after we know my prediction are going to be this much, but. If I am integrating my system with my inventory, with my other, you know, factors, other underlying problems, you may have brain, so your sales will be this much and so on, that type, that type of a flavor which you can add and we can make the model which, which is much more prospective, which is called a prescriptive analytics.

Okay, got it, got it clear? Any, any, any questions? Okay,

okay. So you heard of generative AI? [00:47:00] Yes, sir. Yes, okay. So have you used, uh, chart GPT for your assignment? Yes, sir. Yes, sir. That is the first thing I did. Right. So, uh, so in a simple term, uh, chart GPT, 4 0, is your generative AI, right? But the underlying concept, uh, is is data. Correct. So the underlying, um, so they have trained about close to 20 million of, you know, documents, and then they trained the chat GP to, to answer the maximum questions.

If you're not getting questions, uh, being answered by chat GPT 4. 0, then they will retrain. I mean, the backend mechanism is they are training it, right? So that is, uh, so how many of you use, um, Um, Lama, meta Metas, uh, uh, as well as [00:48:00] Germany. Okay. So all these things are all like lums models where, uh, the underlying concept is, is is the same, right?

Right. So, how does it evolve the journey of generative ai right from 2012 onwards? So, after we, we, we, we started collecting data, now we call it as big data. After we say big data, people are using natural language processing, right. So, when we say natural language processing, they started do a text mining, they started, uh, doing, uh, you know, need more, you know, information from the sense of the data, right.

So, they started using natural language processing, you know, data mining and so on. So, natural language processing slowly evolving, um, you know, slowly to give more and more insights to the people or insights to the customer. So, then you get more, uh, [00:49:00] uh, more benefit out of it, right? So, in a, in a large organization, um, there will be a customer service.

So, the customer service will be available in banking, will be available in insurance, will be available in all other areas as well. See, if there is a problem, then you call the customer service agent or may be, you know, customer service people to, you know, resolve it, right. So, to minimize some of the work of, you know, customer service agents, we have introduced a LLM models.

We have used chatbots, we have used, uh, to answer most of the questions. Now suppose, for example, if you are riding an Ola, if you are riding an Uber, if you are riding, if you are using Swiggy, if you are using Zomato, there is no customer care, uh, actually, right? So there is no, uh, you know, customer care agents being available.

It is all your frequently asked questions. If [00:50:00] there is a frequently asked questions. Then, it will give you answer right away. Even then, if you are frequent, I mean if you are, you know, FAQs are not getting answered, you are worrying. Then, only it goes to the, uh, your customer service agent. Right? So, so these models are your frequently asked questions.

And now, we are looking at ChatBot. Now we are calling it as Generative AI. So the chatbot is getting transformed into Generative AI, All right. And, and each and every, uh, you know, organization in the future will be having their own generative AI platform for their internal use purposes, right. A different example, um, suppose I am working in one company and I hold the maximum information.

Suppose I am leaving the company and joining, uh, DCS, you know, for instance. So, the information which I got is kind of, [00:51:00] you know, either diluted or maybe it will be, you know, gone off, right. So, if you move to the different company. So, the information is, is now lying in a system called Generative AI. All the documents, all the necessary things are kind of available in the system and a newcomer who joins the, uh, joins the new team.

Um, new role. He will actually don't need a Katie or a knowledge session from me. He can go to the generative A and then he can make sure that everything is in line in the proper notes or kind of, you know, drafted and so on. Right? So all these information will be drafted in generative ai. So likewise, each and every company is actually focusing on to build their own generative, a AI platform, or they're trying to build a, I mean, their own LLM model.

For their, I mean, for their organization. Nice. So this is one thing which is kind of happening in the IT world or maybe the data world. [00:52:00] Any questions on Jenny?

So a typical product, um, I have selected product because you know, each and everywhere there is a product, right? So you can take it, we can make a product or we can, um. Um, or if there is any manufacturing, there is a product or there is a retail, there is a product and every company will be revolving around the supply chain areas, right?

Um, so in that instance, have, you know, used this product design or we can say as a product management, right? So what is the, uh, what is the life cycle of a product? When product you can think of, uh, you know, either a car company. Which is manufacturing their product. So what do they do as a cluster? Raw material.

Okay. Raw, [00:53:00] you know, before getting raw material research. Okay. Research, just design, right? So we have to do research, okay? We take from research, right? So that is product research. So before we were doing our launching a product, I will do research on the, okay, what am I going to do? Am I going to launch I 20?

Alright, I 30. So it has to be researched. Market has to be researched accordingly. After we do the research, then we have to design, yeah, okay. We have to do design. And after we do design, we do prototyping. Uh, after we do prototyping, it has to be approved by a lot of people. And after we approve, it goes to the manufacturing.

Uh, and after we manufacture. It goes to, uh, you know, fabrication, packaging and it goes to testing and so on, right? So this is a clear, um, products, right? And [00:54:00] this is the manufacturing or maybe any product for the matter. But if you think about an IT company, if I am doing a product, product is my end result.

But what am I going to do? I have to do a research, correct? So I have to do a research and put a wireframe. If I'm making a mobile app, um, I have to do a wireframe. I have to design myself, right? And different functional entities. Who is my user? Who is my customer? Who is my, you know, end customer? And then how am I going to have the user friendly application?

And how am I going to, uh, build my, uh, build my database design and so on? So we have to do a complete design out of it. And after we do design, then I have to build it. So, so the manufacturing, which is equal to your build here in it, and after we build it, then it goes to the testing. And I, or maybe in between the prototyping in the manufacturing will be your proof of concept that you are just making your idea, consuming your idea, you [00:55:00] want to verify it with somebody.

Then you will build a short functionality and you will test it in the market or maybe give it to somebody. You know, subject matter expert people, and then asking it to test, which is a prototyping. After you validate it, then it, and you're building it, after you build it, you test it and you goes out of the market, right?

So get, get more and more customers out of it. Okay? So in an IT world, you can think of, these are all your, you know, the value chain of your product management or product engineering, right? So now you think about, I'm gonna say one scenario. Product research, right? So how am I going to implement my ai? Okay, so how am I going to implement my, my my, my, my, my, uh, AI and machine learning?

I get all the survey questions. I go out and then ask questions to maximum people. I take sampling, right? I take sampling. Then after I take the sampling, I [00:56:00] will. I will do a research. I will do data science. Okay. My product will be, my demography will be between 25 to 35, you know, age people. My target audience will be male and female.

My, my this thing will be, you know, all demographic will be identified using my research. And after we do that, now we, let us go to the design, you know, side. So design, you may be thinking of how am I going to implement AI or machine learning. Suppose, one person is there, he is doing a product design and he is moving on and there is a new person coming and he is also making a design and then he is moving off and then the other person coming and he is also going off and then he is also moving out.

So, all these design will be now being stored in your software, right. So, in a typical machine learning algorithms, you have learnt about image analytics, you have learnt [00:57:00] about, you Video, analytics and so on, right? So in the design side of it, even if there is images are getting available, you can make a image analytics, right?

So you can design a product wherever there is. I mean, they have left it or wherever. Uh, there is a futuristic where we can able to think about building the same design and so on, right? So likewise the history of product design. Different, different products may be lying in the system. Then you can always refer back as the image analytics and you can start progressing it in the product design side of things, right.

Next, we go to, you know, building it, right. After we build it, we may have to do a lot of analytics on top of it, right, you know, it could be your, uh, descriptive analytics after you get your customers or after you, uh, you know, collect details from the customers and so on. You will do a lot of analytics on top of it, right, Um, [00:58:00] How does, you know, Swiggy do, do an analytics?

You know, you know, think about I am the restaurant, um, and I own, um, I have Swiggy and Zomato orders and, uh, in the Zomato orders, there will be a analytics portion. Saying that it'll, it'll give you a descriptive analytics saying that your timings, your general spike in your order on Fridays will be high between nine o'clock to 10 o'clock.

Uh, or maybe your orders will be spiked between, you know, Saturday, uh, you know, uh, timings between, you know, six 30 to nine 30 and so on. Likewise, they will give you a rough statistics if I am the restaurant owner, uh, from Ziggy and Sonato. Likewise, you can, you know, stop your raw materials accordingly, right?

So it has a huge history of things that, uh, it'll ask people to, uh, keep, um, [00:59:00] you know, buying more and more, and then it'll keep, you know, cross selling and upselling activities will happen so that you are, you know, will be giving, um,

lot of, and.

So, after you do this, then it goes to, you know, testing, um, so by testing also, defects, how do I identify defects by history of different product testing or nature of the testing, uh, and the different, you know, bugs are getting created, you can always identify. Wherever there is a data, wherever there Whatever domain you are into, there is a data science, uh, there is a, uh, artificial intelligence and there is a machine learning[01:00:00]

Okay. In a, in a, in a, in a scenario where, um, supply chain intents, um, problems, right? When I say supply chain intents problems, Um, like manufacturing, like logistics, retail, hospitality, home travel, uh, or supply chain intensive, right? So industries are focusing towards supply chain intensive, you know, problems generally.

So plenty of problems, uh, will be, you know, coming around that area. Uh, and then they will keep resolving it to minimize a lot of cost because in the supply chain, you will involve vendors. So, there will be manufactures that will be, uh, [01:01:00] they will involve lot of vendors where they will be doing it, right.

So, companies are looking to cut down lot of the cost in the supply chain, in the, in the, in the, in the supply chain, value chain. So, they are trying to cut down all the cost. So, to cut down all the cost, I

think this is a typical, um, yeah, I think, um, which is one, the customer, two, marketing and marketing, three, marketing. For digital marketing, these[01:02:00]

are kind of focusing towards customers. So who are my customers for banking? Banking, uh, how many have bank accounts? How many of you have bank accounts, right? Uh, so the savings account holder will be my customers. And, uh, who has credit card are my customers. Who are, uh, loan, I mean, who gets loan is my customers.

And for, uh, for retails, you know, people who purchase product, those are all my customers. Who do I look at it, right? And how do I look at the customers? Customers are king, right? So, for a bank, the customers are the king. And even for retail, even for manufacturing, even for, you know, travel, even for hospitality, even for healthcare, all these customers are very, very important because company has to make sure that, you know, the customers are the [01:03:00] king.

So, I want to understand the customer and, uh, uh, it is called customer segmentation, right? Or like, you know, one, you know, one thing in the industry we call it as customer 360 degree view. Let us talk about customer segmentation next. But the customer, you know, 360 degree view. Okay? So company will now understand the customer 360 degree view.

Okay? So now, okay, Ramesh is having a savings account and he is earning 50, 000 per month. But he is, uh, spending only 30, 000 per month. So, uh, you may, so he is earning 20, 000 additionally. Okay? And, uh, why don't we [01:04:00] push for credit cards, right, or why don't you ask for a loan where he will be interested in car loan, or he will be interested in, you know, bike loan, or he will be interested in getting some gadgets and so on, right.

So the banks will be looking at the customer data and then they will do an analysis entirely, right. So have you also thought about this, right? Suppose you are talking about one product, you know, you know, say for example, if you are talking about Apple iPhone 15 or 16, after you open up your phone, you will receive that same iPhone in your, you know, Facebook or, you know, Instagram or so on, right?

So have you thought about it? You speak something but you get the same message in your YouTube or maybe in your, you know, Facebook and so forth. Yes. Okay. So that is called affiliate marketing. [01:05:00] Right? So, you know, customers, uh, so the companies are looking at you, being watched by you, you know, each and every moment.

Right? So automatically you will have that sense and then keep them in the recommendation. So customers are, um, so the companies are watching you. Watching a movement in your social media, and then they are giving you the right recommendation and, uh, right, you know, solution for you guys. Right? So, which is called a customer 360 D view, right?

So then the customer, you know, segmentation, right? You know, say for example, have you, uh, I will tell you a real scenario where, uh, I have, uh. So, I purchased about close to 3500 in that baggage shop, then using the data, then they said that, okay, if [01:06:00] you purchase for 4500, you get some additional discount, okay.

So, the mindset of, the Indian mindset will be, okay, if you purchase, Another thousand rupees, I get additional two or three backs and I keep on purchasing it or for, you know, 4,500, right? So, which means that from a lower level of customer segment I am, I will be in a bucket where, from the 5,000 range, uh, between 4,000 to 5,000.

Then there is a separate segment, uh, between 3000 to not 2000. There is a separate segment. And 1000 to 2000 is, you know, separate segment, right? If all under 3000 to 3500 segment, right? So the sales person who will again think about it. Right? How can I make the customer from 3500 to the next segment, which is the loyal customer, and, and so on, right?

So how do I push it? By giving [01:07:00] more offers, by giving promotionals. So, you also receive, you know, messages in your mobile phone on Friday, Saturday and Sunday. Uh, you will get, you know, messages if you have purchased, you know, something on Reliance Trends. If you have purchased on, you know, MaxFashions, if you have purchased on any other, uh, you know, you know, you know, who collects your number and throw messages to bring, you know, bring it to the shop and then make them upscale to that, you know, tier one, you know, in the segment.

Okay. So, likewise, um, you would have given a mobile number in any of the places, like, like, you know, Lifestyle, you know, Reliance, uh, Max Fashion and so on. So, they will use that as the membership and, uh, that membership will be tagged as your

So, they will identify [01:08:00] that you are keep visiting my store, you keep buying again and again or you get the service again and again. If you go to any of good salons in Chennai, they collect phone numbers. You go to Green Trends, you go to Natural, you go to Essentials, they collect numbers and then they will say that, you know, I have a membership and then you can use membership or to reduce your membership.

You know, cost and so on, right? So, you, you get 15 percent off and so on, right? which means that they are making them to come to the shop again and again and again to maximize their profits, right. So that is called a loyalty analytics. So customers are king. So, people are thinking about getting, uh, more maximizing their profits, uh, by, by bringing them, uh, to the event or the, to the shop again and again, uh, that is called customer [01:09:00] analytics.

So, likewise, marketing analytics, I will, I will tell you one more scenario. Uh, so have you, uh, heard of Nike? Nike is the shoe brand. So, it is a top one show brand, uh, so I worked with that, you know, show brand for a while and it was around October or November, uh, during the Thanksgiving day, like in India, in India, we follow cricket the most, right, you know, wherever we talk, we play cricket, so that is our national game, okay, our national game is not hockey, it is, it is cricket, okay.

So, but in U. S., um, so they follow baskets. I mean, they follow basketball. They call it as National Basket NBA, right? So, uh, so Nike launches shoes. Uh, like in the [01:10:00] name of Air Jordan, in the name of Air Kobe. And, and then they launch in the name of basketball player, like how would Brad and so on?

But they launched. So what happens? One day Nike wanted to launch shoes in Twitter. Okay. It was in 2012. 12 or 13. I don't remember exactly, but they launch shoes, uh, Nike Fuel Band. Nike, like on Nike, Kobe, uh, and shoes in Twitter at 5:00 AM California timings since y 5:00 AM ca you know, California timings, uh, 'cause Nike head office is in, uh, Brooklyn, Oregon.

Okay. Which is miles under the Mountain Standard timings. Okay? So they wanted to launch, uh, in the Twitter at 5:00 AM PSG timings. [01:11:00] Um, so. They have got thousand, thousand or, you know, in a thousand shoes roughly. And, uh, the value of the shoes is around $200. Okay? So at Y-A-P-S-T, they will give the links in the Twitter and, uh, as soon as you give the links in the Twitter, it, uh, automatically people will start buying it.

Right? So, you get review. So, you get comments, you get everything.

So, what happens is, they will sell 1000 shoes into 200 dollars of business. Can you guess, how much of the time it takes to sell these shoes?

How many, yeah, how [01:12:00] many minutes or hours to take to sell these shoes? Okay. Okay. Any guesses? One minute?

Seven minutes. They have sold a thousand shoes of fat Jordan. A thousand shoes of beautiful feet. Different elements. My head is very clear. I don't know exactly, but my head is very clear. Shoes, but, uh, Nike Fuel Band, which is kind, very, very, uh, very good, innovative product even in 2012, is very similar to your smart watch.

Now we are calling it as Right. So they, which is very, very innovative product, which is kind of launched in. Um, so they have, they, they sold the shoe in seven minutes of time. Think about a revenue [01:13:00] a thousand into 200, which is huge, right?

So, we have one month of time. So, we have one month of time. In the one month of time, what did we do? We have done the sentiment analysis, right. So, we have the data. All, we have the customer data. Customer has given good reviews. Customer has given bad reviews. Customer has given suggestions and using this data and different demographic that we can able to identify where these people are locked in.

Whether they have locked into tech, you know, Texas, or people have locked in California, or people have locked in, in, in, you know, New York and whatnot, right? So we can have a clear understanding, uh, out of this thousand or out of this, you know, 2000, [01:14:00] 3000 people are locked into Twitter. How many have bought the shoes and how many are from Texas, how many are from California, how many are from New York, whether we want to focus only target marketing on each and every state, right?

So likewise, marketing analytics will be running it, right? So the same product launched in, uh, in Christmas time and it was a very, very big hit and, uh, the same product launches happens in the newer tech. It is again double the amount of revenue that they have got it and these data collected from three, three or four product launches, which this data is getting, uh, you know, refreshed.

You have collected more data, more sentiments are produced, more marketing campaigns are done and more products are sold. So this product each and every week, even now, they launch product in Twitter and these products are now with a successful model. And they have [01:15:00] transformed this thing to Europe region of Nike.

In Europe, Nike was not a very, very top one. Uh, in Europe I think Adidas is number one brand. So they have taken this product launch to Europe. And it is again a successful model in, you know, uh, product launch in Europe as well. Right? So likewise, the marketing, uh, uh, the mindset of the company is slowly getting changed.

So even wherever there's a possibility, there is a marketing, is that kind of, uh, kind of available, right? So that is called marketing analytics, right? Any questions? Likewise, plenty of area. Wherever there is a data, there is analytics. Wherever there is a data, there is a data possibility. , there is a data we can do , we can do, you know, whatnot.

You know, we can do entirely. So, I stop here to hear if you have any questions. I am done with the [01:16:00] presentation. So, at least you know 10 or 15 use cases that I am expecting from you.

Okay. Yeah, yeah, yeah. Yeah, yeah. Okay. Okay. Okay,

so that is, in terms of tool, it's a very powerful tool. How do they leverage the tool? We have not seen any use cases here.

Okay. That you see three years. Hence, as an educator for myself, right? How can I leverage this as a tool and how can they, okay. Those right. Okay. See one, um, [01:17:00] you have to start, um, at least the baby steps, right? So a small baby will take, uh, they will crawl and then they will stand, and then they will slowly take steps, right?

Now, you are at the very right step, where in the third semester, you have lot of time for you guys to keep learning it, right. So, the base tool is python, ok. I hope you must be having python in your curriculum also, right. The base tool is python and learn python on top of it, lot of packages are available.

Okay. Meaning when I say packages like, uh, pandas, you know scikit learns, and, uh, even if there is an algorithms, um, there are a lot of packages are made up available, right? Even if you are doing video analytics, even if you are doing image analytics, there are packages are made up available, right? So.

Very fond of what [01:18:00] you are doing. Okay. Okay. So, for, uh, the underlying. Element is statistics, okay. So the mathematics, and then, uh, you know, statistics. The formula, uh, and everything, right? So, you know, everything will be on a formula, correct? If you take logistic regression, there is a formula to it. There is a linear regression, there is a formula to it.

I follow Khan Academy, okay. You know, Khan Academy is a YouTube channel. So Khan Academy. The mathematics he teaches very, very nicely. The statistics he teach from the basic, I follow Khan Academy one, which is in the YouTube and they have a separate, you know, website also. The other one is that, uh, for a statistics, high level statistics, right?

So not a low level statistics. If you are hitting the algorithm side, I follow Brendan, B R E N D O [01:19:00] N, right? I don't remember the last name of Brendon, but I think it is Brendon, yeah, Brendon YouTube or, you know, Brendon Chatsy. He will go very, very slow. He will go, you know, very, very slow, so that you understand this nicely.

Uh, it will be very, very useful for you guys. And, uh, when you are using Python, I hope you Yes. Yes, sir. So you. Jupiter notebook. Do you realize anything yet? Jupiter notebook. It's an IDE. It's an IDE for developing machine learning models. Jupiter notebook. How dare you disrespect Jupiter notebook? I'm learning Python.

What is Python?[01:20:00]

No wind,

the python is the base. So I think we may have to start learning by then and keep putting your efforts on, you know, collecting data. How do I.

So, these use cases are maybe little far fetched, but, uh, maybe after, when you are in 3rd year, you can, you know, reconnect with this, and then you can actually, you know, look at it or, uh, kind of refer back. We can have one more session maybe after one year or so. Students, any questions? No [01:21:00] questions? So your course, uh, writing course.

That is the same. Ultimately, they are the similarity. You don't have to do anything. Yes. To get to that point, just carry it on. Yeah, yeah, yeah. Just, just carry it on. But, I need work. Five years. Five years. There will not be any programmers, I can say. Yes. Yeah.

That's the key message. That's the key message. That's the key message. It's different to, right? Someone who's got 25, 30 years of, uh, There'll be no program. So what do you do? [01:22:00] Control. The key message is there is no need for program after 5 years. Control is right. If you write one line in Python it will be ready in a minute So that is going to be the future, ok.

Which means a new trend would be coming through, right Just a follow up question Yay. Doesn't really understand context,

context.[01:23:00]

So, first of all, the movie called, the Rajinikanth movie called Yantra, it was, I think, it was 10. It was 8 and 9. 8 and 9. It was 8 and 10. I only told 10.

So, just kind of realistic in 15 years. We started thinking, um, around 2017 or 18 onward. Because we asked more questions on the channel. And then it gets changed. The context is also changing, right? I think in 10 years, the context will also [01:24:00] be changed for the others.

I told you uh, I read it, last time. That's the case, right? What do you do for a living? What are you going to do? Business.

It's a suicide. Think about, uh, Priyank will get offended. Priyank, where is Priyank? Priyank, come back here. Come back here. Priyank! That is the local source. Wherever you go, wherever you go, Max, wherever you go, we'll get a suicide. How do the small people start making things about [01:25:00] it? In the latest trends, you take a shirt for about 6.

99, 7. 99. Tata has come up with Studio, and he comes with the same brand. 2. 99. You get a shirt for about 4. 99. 4. 99 is too cheap, bro. Yes, it is cheap. Very cheap. You go to video 299, it is, yes, within, everyone has it, everyone has it, you need this one. You go to an elevator randomly and see 10 people and they are in Okay.

So that is the mindset today. The business is again a suicidal attack. I would say. Maybe in the future the business will be transformed to a different level. Now I'm doing a research on semiconductor. Like, uh, semiconductor will be the next, uh, next, uh, [01:26:00] Bro. for India. At least in India. That's the next big thing, bro.

I mean, not the next big thing. It is already the big thing. Without semiconductor, there's nothing you can do. Without semiconductor, you can do nothing, bro. No, the thing is, even Modi set up some, uh, What are you doing? Modi settles up. Both of these guys are fucking, man, sideways. Bro, I need to ask you a question.

Ask, yeah. Give me your hand. We'll ask questions. Sir, what is AI, sir? Sir, please give me an AI, sir. I want to do my homework. [01:27:00] I want an AI.

I want an AI to play keyboard for me. Bro, I can, I can, I can detect the smallest of pressure sensitive touches. Like this. You know, when you do this, no, that won't happen. Yeah, yeah, yeah. That's called teasing. That's called teasing, you know. You tease, and then you're picked. Why? Why not? Because dads are amazing.

Football. We really need to show care. Many of people believe that. Jaldi hai, chhode takto. I hope that doesn't spoil my people. He's raising a very valuable point. [01:28:00] Where should I focus my energy, right? I look at it this way, right? We spoke about population demographics, right? We have a lot of young people, middle aged people.

Old people. How India will invert, right? Our replacement ratio is slowly stabilizing. It will fall below 2. By now it is at 2 for the first time in a really long time. Then we will start shrinking. Our economy will start shrinking, right? Our population will start shrinking, which means we will, we will be there where Germany is today, where South Korea is today, where Japan is today, right?

That means there are a lot of old people. Old people will need a lot of. kids and you will see a lot of senior uh, uh, right, assistant house i which terms they are coming up. Right. So, that space will, it is already opening up You know you start their sons and daughters in the UK it was so they all have good [01:29:00] fate.

Naturally for the video images No, not those kind of,

for instance, right? One project that I'm currently working on, how do you take somebody who's lying now who is close to death, right? Maybe that's like somebody for three months, six months. How do you make it sick? Who you on a wheelchair, take him the right, if you import a machine, UL has machines like the, like five.

It is for the, is for the, is for the, is for the like you know like, and this might So, let us say we have a back problem, labor problem. Restaurant, that [01:30:00] is the first problem, nobody has cooked, nobody has served. You see, all right. So, rationally focus, focus on, look at where Germany is today, where Japan is today, and where Korea is today.

That is India's future. Correct. Wherever there is business there, Yeah, you have narrowed down. so I will give you a same example. The patient, how you can, um, you know, things like, I mean, the patient who is actually not, you know, you know, let's say it is a physically handicapped people, um, so have you heard of IIT Madras Research Park?

Yes. Right? In, in, in, in, in the, in the research park, they are doing a lot of small, small products, right?

I have seen the same product and have people who is, you know, physically challenged people who can use a small motor type of robot and he can ride within the house, wherein he can go to a restroom easily without [01:31:00] ever again, without ever again, right? So likewise, plenty of small, small products that they build.

I actually have, you know, Research Park is well known for building products and they can build a healthy, the student I mean, the faculties are helping the students to enable them to entrepreneurship, right? So those are all the areas where we have to improve upon. Uh, I mean, look at China, look at South Korea.

They have built a lot of automation use cases. I mean, when they say automation, automation in home, automation in office, automation in, uh, you know, what not, right? So, those are all the things we need there. You know, software will be never ending. That's true. How do I use semiconductor plus device plus software, right and, and how do I use light plus software, right.

So, it is that type of a project on a, you know, work will be coming along the way in the future, right. Like I said, India is evolving towards next [01:32:00] phase of, uh, the life, I would say. Uh, so you may have to enable them, your programming skills, your ideation skills, you know, everything could be. Uh, you know, Elaine to bring you to the next level.

The day of program is done.

When I say it's dead right, and the end of the program a can only still positive together, part of the person,

that human element,

the. So you may have to think about a very innovative thing, likewise your, uh, your [01:33:00] sustainability is important.

You. Thank you. Thank you. Any questions, guys?

Guys, I'll give you two. Mark.

Mark. Ask them, ask question.

So, um, I think, uh, we'll slowly think in the future, uh, maybe the same example I, ten years before. Yeah. [01:34:00] Okay. Thank you. I mean, it's probably, uh, referring to a movie which was based on sci fi. We thought it is futuristic. And, uh, after 2015, I really thought natural image processing will fail. Right? And, uh, a lot of people are taught AI is a trap.

Yeah. Thinking, thinking on your own. So now we are using AI. And slowly AI can able to think. You heard of NVIDIA who has come up with a semiconductor? Kind of thinking in another perspective. So again NVIDIA has come up with a semiconductor device. Which is a GPU. And, uh, that GPU is much more faster, uh, you know, in accessing data and providing results.

Right? And likewise, in future. Take care. The next level of thinking in the neural networks will be, you know, the thinkability, uh, in the AI within the chip [01:35:00] itself, right? In future, we don't know. You know, in place of you, uh, you know, there will be a chip, and then the chip can answer it. Or maybe, you know, there will not be a professor where Robo can be able to teach it.

Thinking involvement. So, will AI be experimenting with the information? See, AI is actually experimenting, uh, with a lot of things in licenses, a lot of things in drug discovery, a lot of things in, uh, tablets. Uh, you want to, you want to generate it in the algorithm. Which is all of the initial scales, right?

I don't know what I can do. You can be in the, uh, you can be one example. No, it seems like, you know, the diamonding. Uh, yeah, it should be called a diamonding. They will have a fairly, you know, I think, yes, I think this is, they can do a smaller version of the KT can [01:36:00] be realized in the human, right? That level of experimenting is also going on.

That's right. Which is not alarming, I mean, which is not, you know, being super scared. But you have to think about it differently from what people are thinking. Yeah, it will be everywhere. You have to think, move along 360 degrees, and then you have to learn the entire 360 degrees.

We don't have anything. Caffeine after this, huh? Coffee, huh? Caffeine. What do you want to get? Whipped cream. I don't know. Something good to get. Whipped cream? Whipped cream. Every Thursday it's whipped [01:37:00] cream. Every Thursday. What do you want to get? I want coffee. That's all right. Depends if it's veggies or sandwiches.

Sandwiches.

Yes, but you get this much quantity.

I need, I need to go out. So nah, 30 won't, so there is a question here guys. Um, so it's a very, very interesting question. Um. So the areas whatever the difficult, I mean what are the difficult areas where AI cannot be implemented, right. Um, so the underlying thing is wherever there is a data we can able to implement, right.

Now the problem is collection of data is the problem. As there is one guy [01:38:00] who talked in the, when I was like, they are looking at, I think his name is Hari or somebody. So he said that I want to predict a agree disease, right. It will be a slightly challenge if there is no data. I will, I will, I will not say there's a no data.

It's the data collection that matters. Right? Uh, because we don't know if the paddy is getting grown, the nature of getting diseases, and we don't know the life cycle of the paddy growing, uh, and the diseases, patterns. If I don't know the patterns, then I can improve predictability. So, my question or answer to you is, the ACRI culture for COVID is going to be a heavy challenge for us to do the prediction.

But, of course, the descriptive one, if we are collecting now, we are also looking at I, building IOT devices and then we are collecting data of the ACRI culture. If everything is automated, [01:39:00] everything is done, then there is no need of job, which means the market will go down. Which means? No, the market will go down.

Then there'll be no need, no demand, there'll be no service, there'll be no money, no. Someone will have to leave the AI. Exactly. Let's say you've reached the pinnacle of everything. You can't. Let's say. We're telling, we're telling if everything is automated, then jobs will go. My point is, my point is if everything is getting automated, jobs will go because there is no need of jobs.

Which means there will be no need of money also. Now we'll go back to trading. Hey, you think about it, man. What is your job? What was there? How did people get stuck? They stole or they created. Or they just took it clean. You know, clean bank, clean bank. That is just a false [01:40:00] fact that we have replaced jobs, we have earned, we have done so much in the last 10 years.

My point is, my point is, my point is A exists to work more. See, my point is A exists to work more. At the end of the day, there is a human behind A. Obviously, A is acting as a

One human AI is destroyed like 2 billion people. No, this sentence, bro, that AI will make the job, that's just false. It's just a false claim. Because AI can never make a job, it's just a sentence to create fear among people. No, bro, it'll create new avenues is what I'm telling you. It'll destroy the old redundant jobs.

It'll create avenues for new [01:41:00] jobs. KVM 28 liters. That is not enough. See, it is, the context, the context to be understood is that you will have to learn new things rather than just sticking on to the things that you already know. I'm not going to talk to him, I'll talk to Kesav. Who the confessions about Casey.

What confessions about Casey can,

huh? Bad Casey. Huh? I bad. What?

I just, I just, I just saw the case. Show me.

I think they might have deleted.[01:42:00]

I have to discuss them. Listen, right. He's raising a lot of questions to which, right, we were domain experts, right? He doesn't have an answer, right? I have, I have, to whatever I can search, right? Looked at other universities reports. You Right. Because he is not a domain expert. Note down, World Economic Forum, WEF, 2023 job report.

That says there are 10 areas in the list. Right. There is a [01:43:00] snapshot. If you go to Google and then type in this, World Economic Forum, 2023 job report, summary report, you will get a slide. So just to quickly answer, at least next five years, they are confidently able to say, Yeah, we already wrote this before.

Certain things like trade skills. What? WEF 2023. Go check. You told it in the first place. Those jobs are safe. Right? Of course. We don't want to do that. That's a different question. I'll tell you this. You know what jobs are safe. Apart from that earlier, right? Someone like, uh, Pishyokarku, right? I used to follow him.

He says robots cannot see well. Right? Robots don't understand context. Right? If you've been big thing there from channel, right? He has given whatever picture on us. Ten years back, before the advent of all the natural language processing, right? The thing you have been asking. If you do creative work your job is safe.

Now that is no longer the case, right. Robots are able to sketch, make movies, right. Pretty much everything. In Hollywood there was a strike, right. The big actresses or something. They went [01:44:00] on a strike saying, you banned this. Government, buy man technology. Give us a job. So, government intervention may be required.

Just as an example, guys, listen. I will tell you one small history. Right, Chennai Ford Plant, all of you know, right? Bye. Mourage Villianagara, there is a Fort plan. Two thousand they put up a plant there. Okay, Fort said, I can 100 percent Automate right, what are called, Dark Factories. I don't need any people to run the plant.

I'm talking 25 years back. The Technology was available back then. The Government of Tamil Nadu said, You have to employ people to only 10%. So by law, they were forced to keep certain processes manual. Even though it can, could be automated. Right? So There is this concept in the US, they have UBI, Universal Basic Income, right?

This idea has been floating around, right? Where, if nobody's got a job to do, the government will give you, like, a thousand dollars, something like that. Whether it'll come to that economic model, I don't know, right? So what your question is asking is valid, but for now, follow World Economic Forum job reports, go there.

[01:45:00] They actually talk about, like, the future of the jobs. They talk about, gives you some advice. Tell that lady to come fast, I have to leave. We shall give you a wish. On the way is better.

On the way is better.

Even [01:46:00] after this, people have problems picking problem statements. Even after this, people have problems picking problem statements. I'm at the barricade.

Actually, I,

I don't want. I don't want to ask. What if, what if, what if Bro, take a piece of paper, write all your roll numbers and give it for autonomous. Give it to who? But, uh, sir told like, give it in a paper form. She's taking it, she's telling him. Yeah, she's [01:47:00] telling him. What if? Automatically. Winced. Automatically.

It's there, Jap. Japan is there, but it has a separate button. What if I don't want that button separately for you? No, yeah, yeah. Here, it's clear. No, there's a, there's a machine. If it's done, coming, whee! There's a machine. Water, forcefully water. Force of water. Isn't it? And then, and then the, the, the, what is it, this, what is this bro, what is this, what is this, what is the, sink, what is it, what is it called, sink, sink, that sink will also get cleaned.

What if I can just use air to clean it, not water to clean it? We, we are, we are Indians, we are used to, you know, actually, actually washing, you know, I know exactly, I have to use a bottle, you know, I have to put a phone, I have to press it. How many phones? One. One is like, one.[01:48:00]

I'll put a phone. There's a machine operating. It's like this, okay? It

No, it's too much. Why shitting? Yeah, why can't we just not eat anymore? No, eating I won't. No, eat, eat, eat exactly the, such that we won't eat the whole thing. How? You have to. We have to someday or something. Maybe in a different form. No, no, no, no, no, no, no, no. Think about it. Only in a different form. What if, what if the food they eat is exactly nothing like your food?

Ok, but, what if, what if, what if, what if, what if, what if, what if, what if the food And then you have to take tablets. I'm telling you. Sir, sir, attendance. I want you [01:49:00] to. Paper, paper. She will take. Same thing.

I 1 0 2 7. What reaction?

I 1 0 23. A one zero I 1 0 1. Four.

What's the name of the movie? Badresh Badresh Yes, Badresh What's the name of the movie? I1029 Adithya Lokesh Hey, why should we call you the Pooja? Studio See, I'm the Pooja I'll come after seven only. [01:50:00] Why? I have this partnership. Class, ah? Partner. High five. Harvesting, ah? High zero. High thousand five. One thousand.

Short cut me whoever says na, I'll not give attendance. Say, uh, Say, I R D and the four digits. And what now? Bharat Darsh. Haan. Sollu. Say. I want to go. I want to, uh, bring this and then for that. I mean, I Please, I I will give you a devolving statement.

I'm going in a minute. She's asked me, she's called me to dinner, sir. We'll review our schedule. We'll switch later. We'll off this night. We'll off this night. Switch, [01:51:00] switch. He said you don't come, I won't sir. Sir said I won't come. You know. Where? Hey, what's that laugh? Nothing man. Prasanna Kumar. We can actually do that.

They don't want attendance. What did he say? Attendance. Me, Parth.

Okay, so, look we went back. We offed the switch outside. We went back. It came after half an hour. The switch was on outside. We offed it again and we have returned. He had not come outside. Go on. You can't go. What's all this? Yeah, because it's Casey Addison. Laptop? Yeah. Laptop. Book? Or O. D.? No, no O. D. [01:52:00] I am not a designer, even,

even Priyank was there when we swapped the switch. Students listen, those teams we have reviewed can leave. And if not, then you can stay back. Tell them attendance and then go. Attendance. Tell them go. Why is my name there? Where you didn't write my name? I don't know. Mhm. [01:53:00] Mhm. Very good. Very good. Very good.

Where did you say? I don't know. I keep trying. I keep trying. I keep trying. Okay. What do you want with this? We have already discussed it. Sometime you have to go talk to Karthik. We'll go fix the time slot. Not today. We'll go talk to him. Yeah. Yeah. Yeah. Yeah. [01:54:00] Yeah.