📝 Notes

Nov 12, 2025

KT Bio Varam Project.

Invited Sumit Malhotra Abhishek Reddy Parvesh Reddy Mohith M

Attachments KT Bio Varam Project.

Meeting records Transcript

Summary

Parvesh Reddy presented a project for a research organization to build a system for consolidating data from four lab machines in various formats, initially focusing on integrating text and FCS files from two machines, with Sumit Malhotra suggesting JSON could be more efficient than CSV for AI processing of data including large datasets with tables and graphs. The AI's role is to consolidate data types, such as light intensity from FCS files and size distribution from NTA data, and suggest optimal graph configurations to validate research and speed up manual analysis. The immediate technical task involves Parvesh Reddy, Sumit Malhotra, and Mo converting light scattering intensity ranges from FCS files into viable particle sizes using mathematically complex Bessel functions and literature provided by Parvesh Reddy, with Sumit Malhotra confirming they will begin the computations using Python libraries.

Details

- **Project Overview and Customer Objective** Parvesh Reddy presented the project, noting the customer is a research organization focused on therapeutics and targeted drugs. The customer wants help building a system to consolidate data from four different lab machines that currently output data in various formats, including text, CSV, and FCS files. The initial focus until mid-January is integrating data from two machines: one providing text data and another giving FCS files, which can be converted to CSV (00:00:57).

- **Data Formats and Conversion** The different machines produce data in multiple formats, and Sumit Malhotra asked if they need to convert all data into a single format, like CSV. Parvesh Reddy confirmed they can use any format easiest for the AI to read, noting they converted FCS files to CSV initially for plotting graphs, and Sumit Malhotra suggested JSON could be more efficient for AI processing and smaller data size (00:04:43). Parvesh Reddy shared technical requirements showing the flow cytometry data from FCS files contains large datasets with tables and graphs (00:05:41).
- **AI Requirements and Data Analysis** The AI's role is to look at various data types, consolidate them, and suggest optimal graph configurations, examining data like scatter plots that show the effects of peptide binding with exosomes (00:02:18). Parvesh Reddy explained that the raw data from the FCS files (flow cytometry) includes large numbers of analyzed particles (up to 3 million) and light intensity data such as forward scatter, side scatter, and different light bands (violet, blue, yellow, red) (00:07:23). The AI is expected to process this data to validate results and speed up research that currently takes significant time for researchers to analyze manually (00:17:51).
- **Connecting Different Data Types** The NTA data, provided in a text file, gives size distribution (size, number, concentration, volume, and area) of particles, but the FCS data only provides light intensity (00:11:26) (00:14:05). The immediate technical task is converting these light scattering intensity ranges from the FCS files into viable particle sizes (e.g., in nanometers) so the AI can compare and validate these against the size distributions in the NTA data (00:15:10). Parvesh Reddy mentioned that they or Sumit Malhotra and Mo will work on a conversion code using literature provided in a folder (00:10:05).
- **Mathematical Conversion of Intensity to Size** Parvesh Reddy highlighted that the literature explains how to convert light intensity into a size value using mathematically complex Bessel functions (00:22:47). This conversion requires inputs such as the wavelength of the laser, which can be initially approximated (e.g., using 531 for blue light) (00:24:01). Other necessary coefficients include the radius of the sphere and the relative refractive index, which is about 1.43 for the exosome and 1.3 for the substrate (00:25:52).
- **Project Timeline and Initial Tasks** The first priority is consolidating flow cytometry (FCS) and nanoparticle tracking (NTA) data (00:29:11). Mo has started working on the basic UI, while Sumit Malhotra, Parvesh Reddy, and Mo are focusing on converting intensities into viable sizes (00:19:04). Sumit Malhotra

confirmed they would analyze the files and start working on the mathematical computations and conversions using Python libraries, planning to connect with Mo within one to two hours to start working on it. They plan to look at the AI and cloud aspects later once Charm provides direction (00:20:15).

- **Future Integrations (TEM and Western Blot)** Future steps will involve adding TEM (Transmission Electron Microscopy) data and Western Blot data. Parvesh Reddy explained that TEM data consists of high-quality images of spherical particles, where the AI needs to gauge particle diameter and identify perfect versus broken spheres, while neglecting blurry background particles (00:29:11). They are not working on TEM and Western Blot data currently as the customer is still waiting for this data from external vendors (00:34:05).

Suggested next steps

- [ ] Sumit Malhotra will connect with Mo within 1 to 2 hours if he is available, or whenever he is available, to check the things together and work on the code to convert light intensity values from the FCS file into tangible size values.
- [ ] Sumit Malhotra will look into using JSON data for AI input to make the process more efficient.
- [ ] Sumit Malhotra will look into the files and literature in the drive, specifically the literature folder, after the meeting to understand the process and conversion of light intensity into a size value using bessel functions.
- [ ] Sumit Malhotra will reach back to Parvesh Reddy if any confusion or questions arise after reviewing the resources.
- [ ] Sumit Malhotra will look into the libraries which are comfortable enough to do the task of mathematical computations via coding with Python.

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00:00:00

Parvesh Reddy: So what we're looking at is um basically the essentially the entire project is we're looking at uh the customer having three or four um uh machines uh lab machine lab equipment. They're a research organization.
Sumit Malhotra: Mhm.
Parvesh Reddy: they do um therapeutics, drugs and uh other things for uh uh for people and uh they want to do something along the lines of targeted um targeted drugs, right?
Sumit Malhotra: Okay. Mhm.
Parvesh Reddy: So um their main project here is they want to build uh okay this is one of the projects they did previously where they have a drug that is uh a kit that is created to target dead cells right.
Sumit Malhotra: Mhm. Okay.
Parvesh Reddy: So what is happening here is the cells that are dead are getting marked by this green color and the rest that are not marked are like basically living cells, right?
Sumit Malhotra: Mhm.
Parvesh Reddy: So that the they they do similar kind of stuff.
Sumit Malhotra: Mhm.
Parvesh Reddy: So they want us to uh help them build a system where um when they have a one big sample that they're using in like four different machines, uh each of those machines will give different uh data in different

00:00:57

Sumit Malhotra: Mhm. Mhm.
Parvesh Reddy: formats.
Sumit Malhotra: Okay.
Parvesh Reddy: So one machine gives data in text format. There's another machine that gives data as a CSV file. not CSV. It gives it it gives it an FCS file.
Sumit Malhotra: Okay.
Parvesh Reddy: Um but uh we've made like a code to convert the FCS file into CSV. So

they have that they have these image files coming and then called western block that is this image file here.
Sumit Malhotra: Yeah. Uhhuh. Okay.
Parvesh Reddy: So to begin with at least for the first few months up to Jan mid we're looking at only integrating two machines.
Sumit Malhotra: Mhm. Okay.
Parvesh Reddy: Uh the machine that provides uh text data and the machine that gives the FCS file.
Sumit Malhotra: Mhm.
Parvesh Reddy: Yeah. So FCS data is is basically it'll come it'll it's like a big CSV file that will create these scatter plots. So that's that's basically what's happening, right?
Sumit Malhotra: Okay.
Parvesh Reddy: Um now uh to give you some more context let me create slideshow.

00:02:18

Sumit Malhotra: Mhm.
Parvesh Reddy: I wonder if can you see the slideshow or just the slides?
Sumit Malhotra: Yes. Yes. Yes. Uh I am seeing the slides at the moment. None of that slide.
Parvesh Reddy: Okay. So not the slideshow. Oh okay. The slideshow is showing up. Okay.
Sumit Malhotra: Yes. Yes. You have to operate, right?
Parvesh Reddy: Yeah. Okay. So what is happening here is the scatter plot right now if if you see each of these u uh lines right uh the red line is basically the exosomes with some marker um
Sumit Malhotra: Mhm. Okay. Mhm. Mhm. Mhm.
Parvesh Reddy: and then the red line is the black line is the marker and the blue line is just the exosomes exosomes is basically the the particle that we're looking the the particle they're using for the sample. Right?
Sumit Malhotra: Okay.
Parvesh Reddy: So now um when they're using u when there's no binding of the peptide with the exosome right you'll see the basic structure here on the right side left side right so on the the middle chart you're seeing if

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Sumit Malhotra: Mhm. Mhm.
Parvesh Reddy: there is some binding you'll see a sort of skewing of the data when compared to the negative control, right?
Sumit Malhotra: Okay.
Parvesh Reddy: And the third one, the third chart is they've bounded to a certain specific uh protein called UR 29. So you're seeing the same like a skew is happening.
Sumit Malhotra: Mhm. Mhm.
Parvesh Reddy: But I mean obviously it's a wider skew because there's more uh more of the particles are getting affected.
Sumit Malhotra: Yeah. Mhm.
Parvesh Reddy: So what the AI needs to do is look at all of this kind of data and sort of consolidate all of it together.
Sumit Malhotra: Okay.
Parvesh Reddy: Oh, okay. M is here. There's some network issue. I'm not able to log in. Oh, okay. Okay. So, um Hey, Mo is sitting next to me, so we can continue. Uh so, what we're looking at is um um basically all of these charts.
Sumit Malhotra: Mhm.
Parvesh Reddy: Um, let me show you. How do I stop presenting?

00:04:43

Sumit Malhotra: So till the till now like as we have the plan for integrating two machines first. So as you mentioned like you already built the code or something to convert the FCS2 into CSV right?
Parvesh Reddy: Connect. Connect.
Sumit Malhotra: Okay. So like my question here is first question that comes into my mind that we are getting multiple data formats right. So do we have to uh convert them into the single format or CS single CSV format or is there any other format that we will also be using like text data we can use any okay okay
Parvesh Reddy: Mhm. We can use anything whatever is easier for the AI to read. That is basically the thing. Uh I converted it to CSV because I wanted to look at the data and plot the graphs.
Sumit Malhotra: yeah because I was thinking like maybe we can use JSON data as well because JSON data is something that AI completely understand and it is much more easier to feed into AI and the size of the data will also reduce because the JSON queries

are very smaller in sizes as well.

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Sumit Malhotra: So it will make a little bit more efficient as well but we I'll look into it if I get something in my mind I will after studying it afterwards as well.
Parvesh Reddy: Uh yeah sure that that's fine. Um let me pull up this. So this is the technical requirements I took from the customer.
Sumit Malhotra: Mhm.
Parvesh Reddy: uh basically what we're seeing is uh the the flow seytometry data that is coming from the f the files coming at the FCS format that is a large data set with tables and graphs.
Sumit Malhotra: Mhm.
Parvesh Reddy: The data set is just numbers but it uh it is used to create graph.
Sumit Malhotra: Yes. Mhm. It will it will form table and graphs.
Parvesh Reddy: Yeah. So, and then uh we need uh the AI to look at all the possible graph configurations suggest like optimal axis like one second let me see if I have that file you know I should just share my screen
Sumit Malhotra: Mhm.
Parvesh Reddy: Huh? Okay. So, basically what you'll be looking at is uh this kind of a data set where you're seeing uh events.

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Sumit Malhotra: Mhm.
Parvesh Reddy: This is each particle that it has analyzed, right?
Sumit Malhotra: Mhm.
Parvesh Reddy: 1 2 3 4 and there's like 3 million parts or something.
Sumit Malhotra: Mhm.
Parvesh Reddy: There's there's a lot. So there's there's a lot of uh particles that have been uh visualized by the machine.
Sumit Malhotra: Machines.
Parvesh Reddy: So what we have here is uh violet band forward scatter in the height axis.
Sumit Malhotra: Mhm. Okay.

Parvesh Reddy: Right? So that is VF C. I should have another file here on this uh uh somewhere here only.
Sumit Malhotra: Mhm.
Parvesh Reddy: It should be there. Um, it so um there should be another file. If not, I'll make another file um which uh of these yeah clears the annotation.
Sumit Malhotra: Mhm. Uh which clears the annotation what basically it is right.
Parvesh Reddy: The dash A is for area. Uh so it's it's like across uh um the X and Y axises.
Sumit Malhotra: Mhm.
Parvesh Reddy: Then um SSC is side scatter.
Sumit Malhotra: Okay. Okay.

00:09:01

Sumit Malhotra: Okay.
Parvesh Reddy: And if you go further, you have uh blue band data, you have yellow band data, red band data.
Sumit Malhotra: Mhm.
Parvesh Reddy: Um uh no actually what is happening is if you see uh forward scatter is if the particle ends up in the machine right it gets shot at by lasers.
Sumit Malhotra: Basically, it is these are all the points where the data is flowing into the charts. So that way I can make a graph. Mhm. Mhm. Mhm. Okay.
Parvesh Reddy: So forward scatter is the scattering of light of that laser light in the forward direction and side scatter is it's getting scattered in the side directions like left and right and this violet is saying uh it is scattering
Sumit Malhotra: Okay. Okay.
Parvesh Reddy: the violet band light.
Sumit Malhotra: Mhm.
Parvesh Reddy: So similarly blue band light is there red yellow all that and then if you go a little further you have the wavelength of the light 447 uh hertz it so they're all uh different wavelengths
Sumit Malhotra: Blue. Okay.

00:10:05

Sumit Malhotra: Okay. Mhm. Got it. So, first is the scattering part and afterwards we have the uh bandwidth wave length.
Parvesh Reddy: huh so the this is all scatter And then once it comes to the wavelength one side, this is what light is getting absorbed.
Sumit Malhotra: Okay.
Parvesh Reddy: So when you have violet band light at 447 uh hertz, this is getting absorbed at uh so all of these numbers don't actually have a unit.
Sumit Malhotra: Cards.
Parvesh Reddy: This is just light in intensity, tattering intensity.
Sumit Malhotra: Mhm. Okay.
Parvesh Reddy: So uh me and Mo are going to work on a uh code to convert this into like a tangible value.
Sumit Malhotra: Mhm.
Parvesh Reddy: Uh for that we have uh there is literature right? If you go back. Um so in this literature folder there's a few papers.
Sumit Malhotra: Mhm. Okay.
Parvesh Reddy: Uh so these papers sort of explain how to convert that. So me and Mo will sit on it today and try to work on it or maybe you and Mo can sit uh together.

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Sumit Malhotra: Mhm. Sure.
Parvesh Reddy: I'll give him an explanation cuz I'm also working on a different project. So I might be busy from 4. Um yeah. So this is this you can see how it works here. There's a image here.
Sumit Malhotra: Mhm.
Parvesh Reddy: So the particle will sit in this box here.
Sumit Malhotra: Got it.
Parvesh Reddy: and it gets shot by a laser. Right? So this whatever is coming out this way will be the forward scatter.
Sumit Malhotra: Mhm.
Parvesh Reddy: What is going this side is the side scatter and then it gets observed by the different band colors.
Sumit Malhotra: Okay.
Parvesh Reddy: So this is this is just what is happening and uh basically what we're

looking at is we're going to see these exosomes what their sizes are. That is one of the first things that we need to notice because I had mentioned there's a text file as well, right?
Sumit Malhotra: Okay. Hold on.
Parvesh Reddy: So the NTA data. So the NTA data gives us a size distribution.

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Sumit Malhotra: Okay.
Parvesh Reddy: Uh let me pull up that as well. Um nano NTA data. Oh, that's okay. Yeah. So this is uh this is the NTI data. This is the text file that comes out. Most of this data is not particularly required. It's like it will give you pH, what the conductivity of the sample is, the temperature, viscosity.
Sumit Malhotra: Mhm.
Parvesh Reddy: uh these will be useful at uh at the stage where we're giving uh the customer is giving us best practices.
Sumit Malhotra: Mhm.
Parvesh Reddy: So they want us to guide the user through some of these best practices. So they'll maybe give us a checklist kind of thing and have uh our chatbot or whatever uh if once they upload this file right it can uh say hey like you haven't controlled the temperature properly or you haven't
Sumit Malhotra: Got it. Mhm.
Parvesh Reddy: controlled the viscosity uh do you want to continue knowing that you haven't done this properly or like uh do you want to go do the experiment again or something like that right so this these These are not particularly um relevant to the data itself.

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Parvesh Reddy: Uh what is relevant to the data is here. This is not the correct file. Huh? So you'll see there is size, number, concentration, volume and area. Right? So these are the this is basically what it's done is the same sample that they use for the other machine.
Sumit Malhotra: Mhm.
Parvesh Reddy: They'll use in this machine also.

Sumit Malhotra: Mhm.
Parvesh Reddy: And in this machine what it'll do is it'll give approximate sizes. So it'll say okay at 52 nanometers there is one particle in that in that centime cube uh in this uh area right sorry in this area uh the volume of the particle is this much and the concentration in
Sumit Malhotra: Mhm. Mhm. Concentration.
Parvesh Reddy: in the sample is 1.1 into 10^ 5. So there's this many in uh concentration per centime cube, right?
Sumit Malhotra: Okay.
Parvesh Reddy: So like this it'll give like a bunch of numbers. So what our AI should do is it should look at this values compare with the values we're getting on the uh on the FCS file cuz the FCS file this file doesn't give us sizes actually it's giving us

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Sumit Malhotra: Mhm. Mhm.
Parvesh Reddy: uh if we consider forward scatter and side scatter it is giving us some intensity of light.
Sumit Malhotra: Mhm. Okay.
Parvesh Reddy: So with the code we are going to make or you and uh Mo can sit together to make uh you'll be looking at something that can convert these scattering ranges into um viable size like okay this is 20
Sumit Malhotra: Mhm. Okay.
Parvesh Reddy: nanometers this particle number five is 20 nanometers or 40 nanometers right so once it gives us that it'll compare this value to these values and then like sort of validate each other, right?
Sumit Malhotra: Okay. Okay. Mhm.
Parvesh Reddy: To say, okay, uh right now you're getting like this much concentration, right? Um to give you some background onto what exactly they're looking at is uh you can't exosomes are created by all the cells in your body.
Sumit Malhotra: Mhm. Okay.
Parvesh Reddy: So there's no specific way to identify, okay, this exosome specifically is coming from your hand, right?
Sumit Malhotra: Mhm.
Parvesh Reddy: So what the exoome does is it'll come, let's say you cut your hand somewhere.

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Sumit Malhotra: Okay.
Parvesh Reddy: Now the cells next to your hand uh next to the cut will release exosomes to the cells that are right on the cut saying, "Hey, repair yourself using these instructions."
Sumit Malhotra: Mhm.
Parvesh Reddy: Right?
Sumit Malhotra: Okay.
Parvesh Reddy: So what they want to build is uh they want to build a kind of uh a way to recognize those and to recognize those they have these protein markers, color markers and all.
Sumit Malhotra: Okay, got it.
Parvesh Reddy: So that's that's basically what they're doing. So now to identify this they need to know uh they they're they know that okay exosomes released from your hand are at this size range and they release uh these specific colors right so basically that's what they're looking
Sumit Malhotra: Mhm.
Parvesh Reddy: for so to cross validate this they want they want to use this AI cuz now if if as a researcher if you go do this by yourself, right?
Sumit Malhotra: Okay, got it. Mhm.
Parvesh Reddy: You'll have some bias. You'll be like, "Huh? Uh maybe you're not looking at the correct uh graphs, right?" Um

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Parvesh Reddy: if you see here, you'll see uh here specifically they're using side scatter with uh some color data, right?
Sumit Malhotra: Mhm. Mhm.
Parvesh Reddy: And you're seeing like a shift in color. Um these two are basically two different samples.
Sumit Malhotra: Mhm.
Parvesh Reddy: This is with um minus CA to plus buffer and this is plus to plus buffer. So there is some scattering movement from the the sample that's here has moved to

behind the line right the line is at the same place basically.
Sumit Malhotra: Mhm. Okay.
Parvesh Reddy: So like that um you might only look at two or three graphs because you're not going to sit and read all these parameters, right? As a researcher, even if you want to read all of these parameters, it'll take a long time.
Sumit Malhotra: Okay. Okay.
Parvesh Reddy: So what they want to do is speed up the process by having the AI look at all of these parameters. You just tell the AI, I'm looking at these three parameters, right? But the AI will go through all of the parameters and say okay uh you haven't looked at some specific graphs maybe in the red light band there is some shift there also and it'll populate that

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Sumit Malhotra: Mhm. So, uh, okay. Uh I got that part here. So now the main task is basically what we have to do we have to uh now check those uh those FCS data to convert them into concentration values. That is the very first task right.
Parvesh Reddy: the Oh, from the txt file, it won't match exactly.
Sumit Malhotra: uh not from the from the txt file. It is supposed we supposed to match those values with the FCS file that the CSV file is and like yeah approximation basically.
Parvesh Reddy: Um, it should sort of in a broad range to it. approximate. Yeah.
Sumit Malhotra: Okay. So uh now like as we are getting all this data so uh just one question is like are we maintaining any uh system version control system here in which we are sharing our updates or something like that daily
Parvesh Reddy: Right now we haven't started anything.
Sumit Malhotra: goal.
Parvesh Reddy: So right now Mo has started with the UI basic UI and we're working on the conversion of these intensities into viable sizes right so once we have a call with Charm she can give us some direction uh cuz

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Sumit Malhotra: Okay. Mhm. Okay.
Parvesh Reddy: I'm not a programmer so I don't know much so my work is more this technical stuff uh business related stuff so so she will give give you some direction into

where to start, what to do.
Sumit Malhotra: Mhm. Got it. Mhm. Got it. Got it. Mhm.
Parvesh Reddy: But for now by rather than waste time not doing anything, we are doing uh at least the back backend stuff where uh we can like read the literature and correct.
Sumit Malhotra: Absolutely. We can yeah we can basically uh create a little bit of backend system where we can just start validating things that this is something according to Charm's input we can optimize it further.
Parvesh Reddy: Yeah. So the AI stuff, cloud stuff, all that stuff she she'll have to come and do. But at least this math stuff we can work on right in the meantime.
Sumit Malhotra: Absolutely no issues. So what I'll do is uh I'll just look into the files basically whatever it is in the drive once more one more time after this meeting I will see basically how we can change the data because obviously this is a new data type or new structures that I need to also look and accordingly uh within 1 to two hours I can to mo that is it if he's available at that moment we can connect once and

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Sumit Malhotra: we can sit together and we can check the things apart from that whenever he's come whenever he's available also then he can message me Because see uh for my side I work accordingly to because for I have other
Parvesh Reddy: Yeah.
Sumit Malhotra: projects as well right in my company that I'm I'm working upon.
Parvesh Reddy: Mhm.
Sumit Malhotra: So I that is why I asked Shiv also for the timings that what exactly the timings you guys are working upon. So basically I can manage my time table and schedule as well.
Parvesh Reddy: Okay.
Sumit Malhotra: So by for any like any need if you guys have you can reach out to me anytime that is not a concern because I'll be available by morning 2 or 3 as well.
Parvesh Reddy: Yeah, that was
Sumit Malhotra: So I am that which interested in like comfortable enough that for that part but the point is uh right now I will be first checking upon all the things what exactly it is just to understand it one more time just to make sure that my mind get it correctly and then accordingly we can start working upon the conversions back upon the mathematical computations whatever it is via the coding with the python so because I have to check all the libraries which is comfortable enough to do these task and everything and okay uh full form for each annotation.

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Parvesh Reddy: Yeah, sure. That works. Um, I had mentioned the full forms, right? That's there in this NTF folder. This data set one that that is the file that has the uh full forms. Yeah, that's in this file.
Sumit Malhotra: Got it. So basically uh just to uh wrap things here uh the literature folder holds the data for uh uh files where it shows the process.
Parvesh Reddy: No. So the literature folder doesn't have any data. It has basically these um these two literature's. Huh. It'll show the process and uh this basically I think this will be what you guys will be working on at least until uh Chari can give you some direction.
Sumit Malhotra: Mhm.
Parvesh Reddy: Uh what this function does is the light intensity it converts it back into a um size value. Right?
Sumit Malhotra: Okay, I'll look at it.
Parvesh Reddy: So um you can go through it. It is quite math heavy. Uh it took me also a long time to understand. Uh what is actually happening is um these bessel functions are being used to convert um uh sort of the angle of scattering plus the the values it is back converting it to a uh size.

00:24:01

Sumit Malhotra: Mhm. Mhm. High value.
Parvesh Reddy: Yeah. So that the basic requirements for these uh coefficients are uh size um size of the the the radius the inner radius outer radius of the sphere and um
Sumit Malhotra: Mhm.
Parvesh Reddy: whatever uh where is that? Oh, is this version two? Sorry. Version one. Sorry, internet is a bit spotty, I think.
Sumit Malhotra: I I'll look at these files.
Parvesh Reddy: Yeah. So, um right now we won't need to worry about uh permitivity, permeability because we're not working with any magnetic components.
Sumit Malhotra: Mhm.
Parvesh Reddy: Um so, we can probably make that one. Oh, okay. See how it is. Huh. So we're looking at uh homogeneous uh thing. So Z MX um here k is 2 pi by lambda. Lambda is the wavelength.

Sumit Malhotra: Mhm.
Parvesh Reddy: Uh this is the wavelength of the laser they're using. Um that the customer will give us at some point.
Sumit Malhotra: Okay.
Parvesh Reddy: Uh for now we can just use like a dummy value.

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Parvesh Reddy: Maybe you can like when you look at the data set uh we can maybe pick uh like uh maybe blue light which is 531 just use 531 and use this column right
Sumit Malhotra: Mhm. Mhm. Okay.
Parvesh Reddy: so it'll give us like uh side scatter from the blue light you have the wavelength there and the intensity values you have here.
Sumit Malhotra: Mhm.
Parvesh Reddy: Close this. Fine. I think this one's causing the uh the size of the particle is what we need to find. Um derivatives, what is the rest? A is the radius of the sphere. M is the refractive index. The relative uh refractive index that is you will be using uh refractive index is 1.43.
Sumit Malhotra: Mhm.
Parvesh Reddy: 43 I think for uh huh 1.433 yeah 1.43 43 for the exoome and 1.3 for the substrate.
Sumit Malhotra: Okay.
Parvesh Reddy: Uh they use some gel. So it's 1.3 for the point something. So that's that they'll use that as the uh ratio mate rand uh like different sizes like it should provide some sizes.

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Sumit Malhotra: Okay. Mhm.
Parvesh Reddy: You can maybe do an iterative thing, put it all in an array and then uh compare these values with that array.
Sumit Malhotra: Got it. Got it.
Parvesh Reddy: Um yeah, so maybe you can take a look at this if it's at some point you can come back with some questions.
Sumit Malhotra: Okay. Sure. Yes. Yes. I'll I'll take the look at all the things.

Parvesh Reddy: Um yeah, that that's fine.
Sumit Malhotra: If I have any confusions or any questions, I'll just drop a text to you over a Google chat or a Okay.
Parvesh Reddy: I have one meeting between 4:30 and 6. So before that I'm free.
Sumit Malhotra: Okay. Okay. Sure.
Parvesh Reddy: Um and after 6 I guess I'll be free yogurt, right?
Sumit Malhotra: Sure. I'll I'll look at in the meantime. After this, I will just start looking up on the resources and if any confusion or any question comes, I'll just reach back to you once.
Parvesh Reddy: So then you can ask Mohit also.

00:28:21

Parvesh Reddy: You can sit with Moit and uh work with him.
Sumit Malhotra: Sure. Sure. Sure. Okay. Wonderful.
Parvesh Reddy: Yeah. So any questions you have for me right now?
Sumit Malhotra: Uh not right now. I just have to go through all the things because it is multiple things and multiple other thing coming in. So I just have to analyze it first.
Parvesh Reddy: Correct.
Sumit Malhotra: Then if I have coming along with any questions, anything else, I'll just get let you know about that part.
Parvesh Reddy: Okay. Uh the customer general requirements are there in this technical document.
Sumit Malhotra: Mhm. Okay.
Parvesh Reddy: Uh if it says should it means that's what the customer I think I should have a few.
Sumit Malhotra: Uh your voice break.
Parvesh Reddy: Hello. Can you hear me now?
Sumit Malhotra: All right. Yes. Yes. Yes.
Parvesh Reddy: Yeah. If it says should that the customer definitely wants it. If it says may then the customer is fine without having it also.

00:29:11

Sumit Malhotra: Mhm.

Parvesh Reddy: So that's just some nom I used right and the rest is just like a heads up on what we will end up doing.
Sumit Malhotra: Okay.
Parvesh Reddy: So the process right now is we'd be we'll be uh consolidating flow cytometry and nanop particle tracking.
Sumit Malhotra: There's nothing.
Parvesh Reddy: This is the first step. Then we'd add temp then we'll add western blood.
Sumit Malhotra: Okay.
Parvesh Reddy: uh just to give you what TEM and western blot are. I will take that also quickly.
Sumit Malhotra: Mhm.
Parvesh Reddy: This is the TEM data. It's electron microscope data.
Sumit Malhotra: Mhm.
Parvesh Reddy: What we're looking at is they'll end up giving us these kind of big uh uh high quality images.
Sumit Malhotra: Mhm.
Parvesh Reddy: Uh what the AI should be doing is it should look at all these perfect spherical uh images like these these are all like perfect spheres right so it should look at these and sort of gauge how how large
Sumit Malhotra: Mhm. Yes. Yes. Yes.
Parvesh Reddy: they are there's a scale in the bottom right to tell you exactly how many nanometers the scale is based on that it should be able to say okay this is like 100 nanometers or 40 nanometers something like that.

00:30:19

Sumit Malhotra: Mhm. Mhm. Okay. So basically it is checking the diameter the whole diameter of that.
Parvesh Reddy: Huh? Diameter and it should do another thing that is not there in this picture actually.
Sumit Malhotra: Mhm.
Parvesh Reddy: Uh is it there in this picture? Huh? Uh if you see some of these here, right, you will see uh circles that are sort of broken.
Sumit Malhotra: Mhm. Mhm.
Parvesh Reddy: It's not there here either. These are also perfect. Um maybe it's here. This is sort of zoomed out a little further here.
Sumit Malhotra: Mhm.

Parvesh Reddy: You'll see some of these circles are like broken. They're leaking and all.
Sumit Malhotra: Mhm.
Parvesh Reddy: Right. So, it should it should sort of sorry not neglect it but it should count how many are perfect, how many are not perfect.
Sumit Malhotra: Neglected. Uh, it should neglect the un scattered ones or Okay, more perfect. Okay, we'll get here.
Parvesh Reddy: But what you'll notice is even here in this uh picture here, right, there's a bunch of small circles in the background.

00:31:53

Parvesh Reddy: It should not look at those at all. It should only look at the ones in frame, right? So the ones in the back are from So basically how this machine works is they have like multiple trays and uh the trays below get out of focus and the trays on top are the ones in focus, right?
Sumit Malhotra: Okay. Mhm. Okay.
Parvesh Reddy: So when uh cuz it's all like transparent liquid, right? You can't see these like directly.
Sumit Malhotra: Mhm.
Parvesh Reddy: So the first layer it'll be looking at and it'll show up with all of these good ones and then it'll go look at the bottom layer below that, right?
Sumit Malhotra: Okay.
Parvesh Reddy: The the tray below it. So all the other uh particles will become sort of blurry types. So it has to sort of uh notice that okay these other particles are in the background neglect those the ones in the foreground which ones are perfect circles which ones are broken circles and give like a complete picture
Sumit Malhotra: Got it.
Parvesh Reddy: like okay in this kind of concentration is what we're looking at kind of Mhm.

00:32:56

Sumit Malhotra: Got it. Got it. So basically uh like the the the tree that is on the foreground it is obvious like uh for the AI as well like we can set that it is obvious the circles that are visible here the the the one we have to count is a little bit bigger in sizes

because at the background as we are seeing here they are like very small small particles at the end because but the image that we are getting for the foreground uh thing that shows some of the bigger circles based upon the scale and zoom in that give. So according with that we can manage right.
Parvesh Reddy: Yeah.
Sumit Malhotra: Okay.
Parvesh Reddy: So that is basically our um this this is I guess a little later we'll be looking at this. Not right now.
Sumit Malhotra: Mhm.
Parvesh Reddy: Uh they also so basically right now for them they have two of these machines. They have the um they have the uh NTA machine and they have the uh FCS machine, the Cytolex machine, right?
Sumit Malhotra: Mhm.

00:34:05

Sumit Malhotra: Okay.
Parvesh Reddy: They're sending the data out to some other customer for uh TEM data and uh they have some other uh vendor for Western B. So that's why they don't have any of the data right now. They're waiting for the data to come back.
Sumit Malhotra: Okay, got it.
Parvesh Reddy: So until we get some data, we won't be working on that. We'll just be working on these other two.
Sumit Malhotra: Got it.
Parvesh Reddy: Okay.
Sumit Malhotra: Got it.
Parvesh Reddy: Yeah. So this is this is our current situation.
Sumit Malhotra: No issues. I'll look everything one by one once again and understand basically exactly what it is happening in the things and accordingly I'll start working upon these part.
Parvesh Reddy: Okay.
Sumit Malhotra: I'll share you the update when I done reading and when I done understanding upon these different different things and how we can connect and merge together to convert the values that we're looking for right and accordingly I can
Parvesh Reddy: Okay. Okay. Yeah.
Sumit Malhotra: update you basically what I have in my mind and accordingly we can discuss it with chari whenever she's available and whatever she thinks about it okay

thanks a uh pra for the explanation and everything.
Parvesh Reddy: Yeah, that works. Yeah, that works.
Sumit Malhotra: Okay. Is there anything else that I sure Okay, great. Wonderful. Okay. Thank you so much for wish. I'll just look into the team and update you.

Transcription ended after 00:35:52