

Zoom transcribed the meeting in Spanish, had to use Word again to make the transcript from the recording audio.

Transcript

00:01:06 Fabio Miranda

Hello.

00:01:08 Kirill Makienko

Good morning, professor.

00:01:09 Fabio Miranda

How are you?

00:01:11 Kirill Makienko

Doing good.

00:01:12 Kirill Makienko

How about you?

00:01:13 Kirill Makienko

Do you see me?

00:01:14 Kirill Makienko

Can you hear me?

00:01:17 Kirill Makienko

Yeah.

00:01:20 Kirill Makienko

Just when I came in today, my lapple started giving me some issues with the graphics drivers.

00:01:31 Kirill Makienko

So we'll wait on, Bumsey.

00:01:47 Kirill Makienko

So essentially when we went yesterday to the DPI to meet, well, to get the data, we had the opportunity to like talk informally with AppNav, Winston.

00:02:03 Kirill Makienko

And there was another two guys, well, another two persons.

00:02:08 Kirill Makienko

One was a software developer that they just hired.

00:02:10 Kirill Makienko

So it was yesterday was her first day, I didn't get her name.

00:02:14 Kirill Makienko

And the other one, I just wrote his name down.

00:02:20 Kirill Makienko

He's like also like working on something ready to glitz.

00:02:24 Kirill Makienko

So originally I thought that essentially they had a model which is able to project a storm, right?

00:02:36 Kirill Makienko

So they are like tracking that and like breaking that into the future, but it seems like they don't have that information.

00:02:43 Fabio Miranda

They do.

00:02:44 Fabio Miranda

They don't have what information?

00:02:46 Kirill Makienko

My original idea was that what I take only in these three months is to develop an algorithm, which I take information, which I thought they already had about current and future storm conditions.

00:03:04 Fabio Miranda

But what's the information that they gave?

00:03:07 Kirill Makienko

They only gave me historical information.

00:03:09 Fabio Miranda

It's what?

00:03:10 Kirill Makienko

Historical information.

00:03:12 Fabio Miranda

But that's the point, right?

00:03:14 Fabio Miranda

you take this historical information, you cut, you take a midpoint there and everything in the past, everything before this midpoint is the past and everything forward is the future.

00:03:25 Kirill Makienko

Yeah, but for example, when they would use this, so let's say when they already like deployed this live, we wouldn't have that future information.

00:03:34 Kirill Makienko

Plus the information that they gave me, it's only-- But that's irrelevant.

00:03:37 Fabio Miranda

The point is we are faking

00:03:41 Fabio Miranda

this particular use case, of going from A to B with going from A to B, take into account where the information, right?

00:03:55 Fabio Miranda

You take the midpoint of that, you take the midpoint of that data set, everything after is the future, everything before is the past.

00:04:08 Kirill Makienko

OK, but then there's an error problem.

00:04:10 Kirill Makienko

The data set that they gave me only has one data point per hour.

00:04:16 Fabio Miranda

That's fine.

00:04:16 Fabio Miranda

I mean, so how many data points?

00:04:18 Kirill Makienko

They gave me data for three months.

00:04:22 Fabio Miranda

So that's quite a lot of data points.

00:04:26 Kirill Makienko

Yeah, but for example, if I wanted to simulate a route, a 45-minute route,

00:04:33 Kirill Makienko

between two small towns.

00:04:35 Fabio Miranda

Yeah, but then then you simulate a route of three hours, right?

00:04:38 Fabio Miranda

And not one hour, 45 minute route, right?

00:04:44 Fabio Miranda

You know, they're limitations with everything, but we cannot let the limitations stop us, right?

00:04:53 Fabio Miranda

And you know, all of these things, so the date is only one hour, you know.

00:05:00 Fabio Miranda

Once the data, if the data comes in, and the data is at the 15 minute resolution, right?

00:05:06 Fabio Miranda

Then if you build something considering one hour to change from one hour to 15 minutes, that's going to be.

00:05:16 Kirill Makienko

Easy.

00:05:18 Kirill Makienko

That's actually what I wanted to consult, so I say with you.

00:05:23 Kirill Makienko

So then I was thinking about, they were thinking that I would build a model.

00:05:29 Kirill Makienko

that would allow me to project the storms.

00:05:32 Kirill Makienko

And based on that information for that model that I built, right?

00:05:36 Kirill Makienko

I do I execute my algorithm to find the like weather on the route.

00:05:43 Kirill Makienko

So I'm just a bit lost like on how to like limit the scope of the project.

00:05:49 Fabio Miranda

But you have to decompose the big problem into smaller problems, right?

00:05:56 Fabio Miranda

there is the problem of finding a route between A to B, right?

00:06:00 Fabio Miranda

That's one problem.

00:06:02 Fabio Miranda

Then there is a problem of finding the route between A to B, considering some sort of set of attributes to the inherent to the edges, right?

00:06:15 Fabio Miranda

So, you know, let's say that we want to minimize time.

00:06:19 Fabio Miranda

Well, we will have to have an attribute related to, I don't know, traffic or

00:06:25 Fabio Miranda

land for each edge, right?

00:06:30 Fabio Miranda

Now, if we want to minimize considering wind or temperature or rain, et cetera, then the attributes become not only the land, but also the weather condition that particular plays, the amount of rainfall, et cetera, right?

00:06:53 Fabio Miranda

So, okay, so we have the first problem, which is, we have two problems now.

00:06:58 Fabio Miranda

Now we have the problem of creating the routing algorithm, right?

00:07:06 Fabio Miranda

And then we have the problem of creating the graph to use the routing algorithm, right?

00:07:16 Kirill Makienko

Well, technically,

00:07:18 Kirill Makienko

I think that they like closed the scope of the project, and I actually am thankful for this, that they expect me to only like use it on one route.

00:07:28 Kirill Makienko

So I can pull, for example, from the Mapbox API, I can pull the set of coordinates between two points, and I can just iterate on that route.

00:07:37 Fabio Miranda

So, but wait, one route considering that the user asked it for one route, right?

00:07:44 Fabio Miranda

So, but you know, it still needs to work for multiple routes.

00:07:48 Fabio Miranda

right.

00:07:50 Kirill Makienko

Yeah, but I mean, yeah, but they were thinking on this case in which I need to like either fake the data for the storm to be able to apply my algorithm with the idea that once I am able to apply this algorithm to one route, they can apply to kind of route, or to be able to develop a model that will project storm, right?

00:08:13 Fabio Miranda

No, of course, but you know.

00:08:15 Fabio Miranda

step by step.

00:08:16 Fabio Miranda

So you're not developing anything to project storm, right?

00:08:20 Fabio Miranda

That's given by the model that they give, the data that they give, correct?

00:08:23 Kirill Makienko

They don't have that.

00:08:24 Fabio Miranda

That's the problem.

00:08:26 Fabio Miranda

They do.

00:08:26 Fabio Miranda

They do.

00:08:27 Fabio Miranda

They gave you the weather forecast for three months, right?

00:08:31 Kirill Makienko

Yeah.

00:08:31 Fabio Miranda

So they are projecting the storm for this time range of three months, right?

00:08:38 Kirill Makienko

Yeah, well, they look the data right right there from the past.

00:08:42 Fabio Miranda

Okay, so we have to decompose this problem.

00:08:45 Fabio Miranda

Again, you have the routing problem, which is what's the that route that minimizes going from H to B?

00:08:56 Fabio Miranda

That's one problem.

00:08:58 Fabio Miranda

But behind that problem, you have the problem of, you know, how do you create the graph with all the attributes that you need take into account?

00:09:07 Fabio Miranda

in order to compute this minimum route.

00:09:12 Fabio Miranda

Do we agree on that?

00:09:15 Kirill Makienko

Yes.

00:09:15 Fabio Miranda

So, again, there are three steps here.

00:09:20 Fabio Miranda

One is creating the graph, right?

00:09:25 Fabio Miranda

Second one is, okay, what's the routing algorithm that we're going to use?

00:09:30 Fabio Miranda

And it cannot be Mapbox, Google Maps, because they will only take into account there.

00:09:36 Fabio Miranda

routing problems, right?

00:09:40 Fabio Miranda

So it cannot be just a calling API, it cannot.

00:09:44 Fabio Miranda

And then building the interface so that the user can add point H, point B, right?

00:09:52 Fabio Miranda

So you have already three steps here that you can start thinking about how to employment those things.

00:09:59 Fabio Miranda

One, how do you create the graph?

00:10:02 Fabio Miranda

Because the graph needs to take for each attribute of the edge

00:10:06 Fabio Miranda

the graph needs to consider all of the attributes that they sent you, that they gave you, right?

00:10:15 Fabio Miranda

Uh-huh, yeah.

00:10:16 Fabio Miranda

And these things are in different resolutions.

00:10:19 Fabio Miranda

So the data that they sent you is probably net CDF in which the well information is at the grid level.

00:10:28 Fabio Miranda

Is that the grid?

00:10:29 Fabio Miranda

You have a bunch of grid points for the wind, the temperature, rainfall, et cetera, right?

00:10:35 Kirill Makienko

It's in .NC format, but I didn't haven't opened it.

00:10:40 Fabio Miranda

Yeah, that's next.

00:10:43 Fabio Miranda

So you have the problem.

00:10:46 Fabio Miranda

How do you aggregate that into a neighborhood, into a network level?

00:10:54 Fabio Miranda

Make sense?

00:10:56 Kirill Makienko

Yeah.

00:10:58 Vamsi Dath

But I think, hello, sorry.

00:11:04 Vamsi Dath

So I think the problem still process right, as in the data that they are giving or like that they have is of the weather data, right?

00:11:14 Vamsi Dath

Of the weather data as in with the attributes are like weather data points, like temperature, humidity and stuff like that.

00:11:20 Fabio Miranda

So what's the problem?

00:11:22 Vamsi Dath

So they have not identified any events yet, right?

00:11:24 Vamsi Dath

So that's the point.

00:11:25 Fabio Miranda

That's the point.

00:11:26 Fabio Miranda

You guys are missing the point.

00:11:28 Fabio Miranda

So you have a range of three months, right?

00:11:31 Fabio Miranda

It's in the past.

00:11:33 Fabio Miranda

Of course, it's in the past.

00:11:34 Fabio Miranda

So, but you take these three months, you get the midpoint.

00:11:38 Fabio Miranda

Everything in the first month and a half is the past.

00:11:41 Fabio Miranda

Everything in the second month and a half is the future.

00:11:46 Fabio Miranda

You just pretended that you have a reliable forecast for a month and a half, right?

00:11:56 Fabio Miranda

And now we play with the routing, right?

00:11:59 Fabio Miranda

If the routing starts at 8:00 AM,

00:12:03 Fabio Miranda

off a Friday, and it goes all the way to, let's say, 10:00 PM, right?

00:12:09 Fabio Miranda

Well, we need to aggregate everything that comes after that Friday at 8:00 AM.

00:12:18 Kirill Makienko

Makes us.

00:12:20 Kirill Makienko

Yes, but could you, well, why should I do it from scratch?

00:12:26 Kirill Makienko

Why should I make another reading to connect two points from scratch?

00:12:31 Kirill Makienko

Like, why can't I use an API to just get the sets of coordinates?

00:12:35 Fabio Miranda

Because the API will not take into account the data that they set up here, right?

00:12:39 Fabio Miranda

The API will only give you the fastest route between A and B.

00:12:44 Kirill Makienko

Yeah, but I was thinking that taking those, like, I'll call the API to have the set of coordinates to connect the two points and over those coordinates, I'll operate.

00:12:59 Kirill Makienko

Right?

00:12:59 Kirill Makienko

So I'll have to get the coordinates to get from A to B anyway, right?

00:13:05 Kirill Makienko

And I can impose the data set that they gave me, whether I calculate it myself or whether I get the coordinate set from an API.

00:13:12 Fabio Miranda

No, you cannot do that because then there is no planning here, right?

00:13:19 Fabio Miranda

You're just taking one route given by the API, and you are superimposing whatever, weather data that they sent you, right?

00:13:30 Kirill Makienko

What I wanted to do is make a simulation given the router I have.

00:13:38 Kirill Makienko

So for example, every 10 minutes of that given a speed that I know, right?

00:13:45 Kirill Makienko

Every 10 minutes, so every distance, every 10 minutes, I'll sort of, how would you say it?

00:13:51 Kirill Makienko

I'll make a snapshot of what's around the car at that moment, right?

00:13:57 Kirill Makienko

And I'll operate over the weather on only on that area, right?

00:14:02 Fabio Miranda

That's one solution, but that that's a immediate solution, right?

00:14:07 Fabio Miranda

You need to find, you need to have something that looks at into this.

00:14:12 Fabio Miranda

horizon of weather events, right?

00:14:16 Fabio Miranda

So, it comes to the problem of how we do this routing, which is interesting, right?

00:14:23 Fabio Miranda

I think that my feeling is that this is a classic problem in computer science, right?

00:14:34 Fabio Miranda

I want to go from H to B and I want to minimize certain attributes.

00:14:40 Fabio Miranda

The challenge here

00:14:41 Fabio Miranda

is that I have attributes that change over time, which makes this problem very much more complex.

00:14:55 Fabio Miranda

So I think that in order to break this down, I think we should, let's first get comfortable computing the route between A and B, the fastest route without relying on an API.

00:15:09 Fabio Miranda

And the second step is,

00:15:11 Fabio Miranda

Okay, I have a graph that computes the route between A and B, and I have control over this algorithm, right?

00:15:18 Fabio Miranda

Meaning that I field the graph, the graph has certain attributes, edges, nodes, et cetera, and I have control over how I compute from H to B, right?

00:15:32 Fabio Miranda

Now, the second step, okay, let's modify this graph so that the graph takes into account the data that takes sent us.

00:15:40 Fabio Miranda

Let's first consider just a snapshot of one hour.

00:15:44 Fabio Miranda

Yeah.

00:15:45 Fabio Miranda

And then, okay, so the route that I wanted to go from H2B in the beginning, I wanted to minimize the distance, let's say.

00:15:54 Fabio Miranda

Now I want to minimize distance and temperature.

00:16:00 Fabio Miranda

So there are two objectives that I want to minimize right now, right?

00:16:05 Fabio Miranda

Did that route change or it kept the same?

00:16:10 Fabio Miranda

I think we should, you know, baby steps.

00:16:14 Fabio Miranda

I would say that the first baby step is, let's create this graph.

00:16:20 Fabio Miranda

Let's get this graph from, there is this, let's see here.

00:16:24 Fabio Miranda

So there is this OSMNX Python library that you can use to compute to extract networks.

00:16:33 Fabio Miranda

There is, you know, I bet there are thousands of routing.

00:16:44 Fabio Miranda

But in the challenges that come the novelties, right?

00:16:49 Fabio Miranda

So there is OSMX, which is a library for extracting networks from CDs.

00:16:57 Fabio Miranda

I would say, first step, get user to that OSMX library.

00:17:04 Fabio Miranda

See if you can establish some software,

00:17:09 Fabio Miranda

space that you can't play around with the parameters for that OSMNX, right?

00:17:15 Fabio Miranda

I want you to work in the Chicago region plus, I don't know, some neighborhood in Chicago, so that you have a very small and concise boundary, right?

00:17:28 Fabio Miranda

Okay, now the second step is I have a graph from this region.

00:17:33 Fabio Miranda

Let me

00:17:34 Fabio Miranda

pick eight point from the top bottom, from the bottom left or the way to the top right.

00:17:40 Fabio Miranda

And then let's see if OSimon X can give me the routing between A and B.

00:17:47 Fabio Miranda

So you probably give you some subgraph along this line, along this graph.

00:17:55 Fabio Miranda

The second step is, okay, I have a graph, now I have the weather data, how I can fuse them together.

00:18:04 Fabio Miranda

And then the following step is, okay, the routing that I did from H2B, considering just the length of the edges.

00:18:11 Fabio Miranda

Now I can consider the length and some web information that I have embedded there.

00:18:19 Fabio Miranda

Makes sense?

00:18:25 Kirill Makienko

Yeah, more or less.

00:18:27 Kirill Makienko

But now, if we have this approach, then we have two other problems.

00:18:31 Kirill Makienko

First of all, is

00:18:33 Kirill Makienko

Well, does this OSMNX library have like the information for like city routes and like state routes?

00:18:41 Kirill Makienko

Or would I have to like pull that information from another place?

00:18:44 Kirill Makienko

Because...

00:18:45 Fabio Miranda

Can you repeat the question?

00:18:47 Kirill Makienko

So I need to have the information of what the like...

00:18:52 Kirill Makienko

what the streets look like, right?

00:18:53 Kirill Makienko

So I need to have the information that, you know, this block are, it's a set of discoordinates, right?

00:18:59 Kirill Makienko

So I can make the connection, right?

00:19:01 Kirill Makienko

Okay, so it has it like already embedded.

00:19:03 Kirill Makienko

I didn't have to go search for another data set for like city city streets.

00:19:09 Fabio Miranda

No, SMNX can will give you, you, you give the let long boundaries and then out of that we'll give, it will give you the graph.

00:19:18 Kirill Makienko

Okay.

00:19:19 Kirill Makienko

And then the second problem is that they are expecting to implement this into their current IRS IQ website.

00:19:27 Kirill Makienko

So that's why I was thinking in terms of making it everything like with MapBox so they can just load it in as easily as possible.

00:19:35 Fabio Miranda

So that's the sort of requirements that we don't need to satisfy.

00:19:38 Fabio Miranda

I think the requirement that may need to satisfy is we want something cool, right?

00:19:43 Fabio Miranda

We want that we want something that's worth tackling, right?

00:19:47 Fabio Miranda

We don't want the

00:19:48 Fabio Miranda

you know, some website that lives somewhere.

00:19:52 Fabio Miranda

We want something cool.

00:19:54 Fabio Miranda

We want to tackle some challenge, right?

00:19:56 Fabio Miranda

And I think we found a very big challenge here.

00:20:00 Fabio Miranda

So I'm saying that things look trivial, but, you know, it's not.

00:20:02 Fabio Miranda

The devil lives in the details, right?

00:20:07 Fabio Miranda

But, you know, there is a very nice space for innovation here.

00:20:13 Fabio Miranda

You know,

00:20:14 Fabio Miranda

multiple aspects, right?

00:20:15 Fabio Miranda

You know, beyond the knowledge of graph stuff, I think that we have data, weather data, we have very large graph, we have this routing problem.

00:20:26 Fabio Miranda

We have, you know, on top of the routing problem, we have this problem of scenarios, right?

00:20:32 Fabio Miranda

HB, now considering this, considering that, how do we manage all of that?

00:20:39 Fabio Miranda

You know, the back of heads way back there.

00:20:43 Fabio Miranda

It's plugging this into their software.

00:20:48 Fabio Miranda

I wouldn't consider that.

00:20:51 Fabio Miranda

We want the prototype that we feel proud of in that pushes innovation in this area.

00:20:59 Fabio Miranda

Making into their prototype, I'd say it's a secondary no requirement.

00:21:07 Kirill Makienko

Okay.

00:21:08 Kirill Makienko

And then third problem that I just remember what it sorts of a requirement that they thought about.

00:21:16 Kirill Makienko

So in your approach, we are already founding like the optimal path between two points, given the thresholds that we define, right?

00:21:25 Kirill Makienko

That it has to be less than this amount of temperature, the other route, the wind doesn't surpass.

00:21:33 Kirill Makienko

this quantity or this mile per hour, right?

00:21:35 Kirill Makienko

The speed, the humidity doesn't go above this level, et cetera, right?

00:21:40 Kirill Makienko

They also want to find multiple like alternate routes.

00:21:46 Kirill Makienko

So just, you know, just to like write it down until that down on the break proposal.

00:21:54 Fabio Miranda

So, I zone out a little bit because I was typing something, but mood power routes, right?

00:22:02 Fabio Miranda

every time that you have some objective function.

00:22:06 Fabio Miranda

There are multiple ways.

00:22:10 Fabio Miranda

I mean, it's a space in which you have dimensions and you might have points of minimum and points of maximum, right?

00:22:21 Fabio Miranda

So the point is maybe not necessarily getting the global minimum that satisfies all of the constraints that we had, all of the objectives that we had, right?

00:22:32 Fabio Miranda

It's about, you know, in this space, what are the set of minimum points that I can present as alternative routes, right?

00:22:45 Fabio Miranda

Which is in itself, interesting, right?

00:22:48 Fabio Miranda

You have this very life space, multiple variables, you know, wind temperature, you know, I don't know, length, multiple, multiple, multiple variables, right?

00:22:58 Fabio Miranda

There are many, many, so it's a multi-dimensional field, right?

00:23:06 Fabio Miranda

You can have many, many, many points of minimum there.

00:23:10 Fabio Miranda

You might have a global one, but you have many, many, many points.

00:23:16 Fabio Miranda

How to find this?

00:23:17 Fabio Miranda

How to present these points as alternatives, right?

00:23:21 Fabio Miranda

Again, that's an interesting challenge in and on itself, but I think we should

00:23:28 Fabio Miranda

stuff with baby steps.

00:23:31 Fabio Miranda

So I would say get used to SMNX.

00:23:34 Fabio Miranda

That's one.

00:23:37 Fabio Miranda

Get used to adding, well, get used to the routing H2B using your SMNX to integrating weather with graph with the graph, right?

00:23:51 Fabio Miranda

Then routing from H2B considering this new graph.

00:23:55 Fabio Miranda

Okay, now,

00:23:57 Fabio Miranda

How do we consider all of these, how do we consider all of these, how do we consider all of these potential options that we can have from going from H2B?

00:24:13 Fabio Miranda

Make sense?

00:24:15 Kirill Makienko

Yeah, and then, well, the original problem that they set to like result is in that case, given for example that a route,

00:24:25 Kirill Makienko

between two points in the city, those take only about 20 minutes, right?

00:24:28 Kirill Makienko

To complete.

00:24:29 Kirill Makienko

Right now, what they have is they only impose over that route, one point, one data point that they have at the moment when the query is made, right?

00:24:41 Kirill Makienko

So essentially, I'm going to be doing that, but like with extra steps, when when I start, well, I'd have to like make some projecting model or something to model the.

00:24:55 Fabio Miranda

Wait, wait, don't think far ahead, think the initial steps first.

00:25:00 Kirill Makienko

Also, okay, but that come after like having this base of like being able to a graph, minimizing the set of conditions that I gave it, okay?

00:25:11 Fabio Miranda

Yeah, so right now, after that I mentioned, like the four or five steps that I mentioned, it's considered that's a static graph, one time step, right?

00:25:20 Fabio Miranda

But you know, the weather will change along the route, right?

00:25:22 Fabio Miranda

I would say that's a even greater challenge.

00:25:27 Fabio Miranda

But you know, let's work first with the, you know, the, you know, let's learn how to walk before we run into that.

00:25:37 Kirill Makienko

Okay.

00:25:38 Kirill Makienko

Yeah.

00:25:39 Fabio Miranda

But you know, I think that you should wear your researcher hat, right?

00:25:44 Fabio Miranda

Don't think of this.

00:25:45 Fabio Miranda

So I think that this is a very interesting problem.

00:25:50 Fabio Miranda

You know, it's a very interesting problem, right?

00:25:54 Fabio Miranda

From all angles, but where your researcher had, right?

00:26:01 Fabio Miranda

Don't think of this as just satisfying a set of requirements.

00:26:07 Fabio Miranda

It might be.

00:26:08 Fabio Miranda

But this is about, you know, pushing innovation and doing something new in this particular problem, which I think that is very, very, very cool.

00:26:19 Fabio Miranda

Mhm.

00:26:20 Fabio Miranda

Makes sense?

00:26:22 Kirill Makienko

Yes, yes, yes.

00:26:24 Fabio Miranda

It makes sense.

00:26:25 Kirill Makienko

Do you guys have other questions I have?

00:26:28 Kirill Makienko

No, I don't have yet.

00:26:31 Kirill Makienko

Yes.

00:26:32 Fabio Miranda

Sounds good.

00:26:32 Fabio Miranda

So, but you know, I don't want to earn the value the challenge here.

00:26:39 Fabio Miranda

So I kept saying, oh, just use assignment X.

00:26:42 Fabio Miranda

Oh, just do the routing between A and B.

00:26:44 Fabio Miranda

But you know, all of these things are challenges.

00:26:47 Fabio Miranda

But you get the hang of it by simply doing it.

00:26:51 Kirill Makienko

Yeah, okay.

00:26:52 Kirill Makienko

Then I'll start playing with OSMNX and I'll start.

00:26:57 Kirill Makienko

One of the things that they asked me to is given all the data that I have, I need to find a storm that I want to use for my example.

00:27:03 Kirill Makienko

So I'll start doing that, like coming through the data.

00:27:06 Fabio Miranda

And then the one thing that I also didn't mention is that you have to get users to the .NC file, right?

00:27:13 Fabio Miranda

which is also not that easy to handle.

00:27:16 Fabio Miranda

So there is this NetCDF for Py NetCDF, something like that.

00:27:21 Fabio Miranda

That's about the Python library that you can use to load this data.

00:27:25 Kirill Makienko

Okay, articularly great.

00:27:27 Fabio Miranda

Sounds good.

00:27:30 Kirill Makienko

I'll go around.

00:27:31 Kirill Makienko

Okay, well, great.

00:27:32 Kirill Makienko

Thanks for the excellent everything.

00:27:36 Fabio Miranda

All right.

00:27:37 Kirill Makienko

And then I'll modify the proposal that I have.

00:27:40 Kirill Makienko

And I'll be aiming to either this Friday or next Monday or next Tuesday, right?

00:27:45 Kirill Makienko

So as soon as I possibly can like do all of this to present everything to everyone.

00:27:51 Kirill Makienko

So we are everybody we're like on the same page.

00:27:54 Fabio Miranda

Sounds perfect.

00:27:55 Fabio Miranda

All right.

00:27:56 Fabio Miranda

Thank you.

00:27:56 Fabio Miranda

Thank you guys.

00:27:57 Kirill Makienko

Great.

00:27:58 Kirill Makienko

Thank you, Professor.

00:27:59 Kirill Makienko

Bye.

00:27:59 Kirill Makienko

Have a great day.

00:28:00 Fabio Miranda

You too.

00:28:03 Kirill Makienko

Bye.

00:28:04 Kirill Makienko

Thank you.

00:28:05 Kirill Makienko

So this meeting's about to end.

00:28:07 Kirill Makienko

Let me know when you have free time and I'll send another.

00:28:12 Kirill Makienko

Yeah.

00:28:14 Vamsi Dath

Another college.

00:28:15 Kirill Makienko

Well, just let me know when you have free time, yeah.