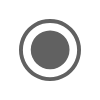
**Transcript**

29 September 2025, 08:55am

 **Oscar Algotsson** started transcription

 **Muhammad Awais Sattar** 0:03  
The the whole thing, yes.

 **Oscar Algotsson** 0:05  
Yes, basically I want like a little talk with you about basically you how you got into the field and what your current field is sort of like that.

 **Muhammad Awais Sattar** 0:20  
OK so.  
I will quickly go through the presentation that we have and then you can ask me questions, yes, yeah.

 **Oscar Algotsson** 0:31  
OK. Yeah. Thank you.

 **Muhammad Awais Sattar** 0:41  
Screen.  
You see the presentation, yes.

 **Oscar Algotsson** 0:49  
Yep, yes.

 **Muhammad Awais Sattar** 0:51  
Mm-hmm.  
I don't know one accepting very weird.  
Don't want.  
My PowerPoint is stuck. Just give me a second to fix this.

 **Oscar Algotsson** 1:14  
Yeah, no worries.

 **Muhammad Awais Sattar** 1:20  
Hmm.  
So I have to go.  
After updating my system I think so there is something really funny happening with the presentations. Every time I I try to put it in presentation mode it's always something happening. So yeah, just give me few minutes and then we can talk.

 **Oscar Algotsson** 1:37  
OK.  
Yeah, it's no problems. Do you mind if I ask you some questions in the meanwhile?

 **Muhammad Awais Sattar** 1:50  
Sure, sure, sure, sure, sure. Why not? Yes.

 **Oscar Algotsson** 1:53  
Yes, I did some digging in your background and you've been studying and doing research in a lot of places across the world. Do you have any preferences and what's it like studying in Lulu of all places?

 **Muhammad Awais Sattar** 1:59  
Mm-hmm.  
Yep.

 **Oscar Algotsson** 2:12  
Way up north.

 **Muhammad Awais Sattar** 2:14  
Yep. So. So yeah, it's it's it's. It's a long journey I started.  
With my home country, Pakistan went to US and then UAE and then I was in Poland for my PhD. Then I went back to my home country and then yeah, it's it's, I came here.  
For a post doc to the position again.  
What I really like about this place is it's very calm.

 **Oscar Algotsson** 2:44  
Hmm.

 **Muhammad Awais Sattar** 2:45  
Not too much noise as as compared to the places I used to live in. I really like the work culture here. We are relatively smaller group, but I I I really like.  
Being here and I mean the support system is very good. The research opportunities are very good. Of course you have to find your own money to stay here. But again, this is something very exciting as well.

 **Oscar Algotsson** 3:13  
OK. Yeah.

 **Muhammad Awais Sattar** 3:15  
So very quickly, I mean I I'm not going to bore you with details. So I will show you some faces and then what we are currently doing because there are few projects that I also don't have a deep idea of. But yeah, I I will tell you that we are doing this and maybe the future if you are.  
Trusted. You can come have a chat with us. So we are automatic control group and signal system to be. So what we are doing is our research focus is controls.  
Of course, optimization, dynamic system modelling, system monitoring and that's one thing that that is not here right now that is instrumentation. So I'm the guy who is basically involved in instrumentations mostly I'm I'm not traditional controls.  
I'm the odd one out. Everyone is doing control, but I'm I'm more focused towards the instrumentation parts, so some application areas are industrial process control, energy system, transport and infrastructure as well as system biology.

 **Oscar Algotsson** 4:16  
OK.

 **Muhammad Awais Sattar** 4:26  
But we are also having.  
There's a few projects that is basically we we recently had started a new project that is not in the presentation that is called in FQL and we are going to monitor the quality of the Rainier meat using hyperspectral imaging.  
I'm doing the plants and ultrasounds, which I will explain to you later, so here are the group members. I hope you see the screen, yes.

 **Oscar Algotsson** 5:00  
Yeah, you can see.

 **Muhammad Awais Sattar** 5:00  
Is. Yeah. OK. So Bina is the head of subject, Andreas is our head of the weekend. We have Khalid, who is an associate professor, Wolfgang. He is part time. So he's only 10% of the time with us, Thomas. He's around 7 1/2 percent time with us.  
And I am here as a postdoc. Of that I meet is postdoc, and then we have 3 PhDs, student Yohan and Osama and Ahmed Ahmed is I think so again not full time with us is part time. So if you.  
Really. See us. So it is like this. So you only 10% and half percent and 50% so. So we we are like this I mean you you see only these people's full time and then you can see both Kang and Thomas and Abbott basically.

 **Oscar Algotsson** 5:40  
Yeah. OK.

 **Muhammad Awais Sattar** 5:53  
With the with the reduced times, our research projects are always aligned with the sustainability goal of the EU and we we are trying to.

 **Oscar Algotsson** 5:55  
All right.

 **Muhammad Awais Sattar** 6:05  
Research in all these 17 areas, I mean of course we cannot focus on all of these things, but we we are trying as much as we can.

 **Oscar Algotsson** 6:14  
Hmm.

 **Muhammad Awais Sattar** 6:16  
When it comes to E search, so we have an ongoing project that is for the digital point, for the failure systems. So after Amit Wolfgang and call it, he's they are working on it. The main idea is to.  
A digital point for the real infrastructure and he's working on that.  
We have a project PSU project in which Johan is working so it's optimization of fraud floating process. They're designing a controller for. It could be very honest. I am. I'm not really sure about what is going on in the project but.  
Yeah, yeah, they are trying to understand the behaviour of the froth and they are developing a model for it. The controller for it. Osama is working with the King Energy. So this is a really, really new concept and it is funded by LKB as well.  
Amir is basically working with the data centre, so how the data centres can be cooled? Yeah. Again this is again the control project that they they are doing. We we used to have another post doc.  
Who? Just he got a job somewhere else and he he left. So he was working with the food production. This project. I have no idea. But yeah, he was he. He published a few papers on it and yeah, I I I didn't really think about it. But yeah, that's.  
And then we have another. This is this is something that is more towards the architecture. So they are trying to, Leena. Dina is basically.  
A key person here. So Dina, they are trying to have self cleaning public toilets from the P use able materials. So I think so they are testing different deals to make. It's a semi self cleaning public toilets for that one.  
And here is is me so my my idea and the project is basically ultrasound and.  
And the health monitoring of the plants so.  
Let me let me give you some some some more details. So why ultrasound so?  
The funny thing is, we have never seen a duck sound working with.  
Thoughts before and it is really funny to hear. Oh, ultrasound and thoughts. But we we we really use ultrasound to discover what is inside our body and we we really see the gender of our baby using ultrasound and we see how.  
The tumour is progressing using ultrasound or things like that, but ultrasound implants it is. It is really funny. So why using ultrasound it it comes really from the two perspectives of first it is non destructive. So for example if when you go for an ultrasound.  
The doctor is not going to open you for anything, so it's it's something that you need to probe that he's going to he or she's going to basically put it on you when you are not going to feel a thing. So it's not destructive. And the second one is the.  
Whole plant testing is is really destructive, so they usually take out the whole part and then they they have some kind of experiments on it. And this is something that we don't really want to do but ultrasound in plants again.  
It it doesn't really make sense, but when we study biology and what we have studied, our whole life is that plant is a living object, is a living tissue. So based on that, if we are putting an ultrasound on the living person, then we can't have.  
Some results from a living tissue as well, so that's that's the main motivation of it. Yeah, sure.

 **Oscar Algotsson** 10:16  
Yeah, I have AI have a question real quick. I was looking into your earlier research and you had one involving ultrasound in agriculture, is that right?

 **Muhammad Awais Sattar** 10:27  
Yeah, yeah, yeah, this this is the one I'm I'm talking about. Yes. Yeah, yeah. I mean that. That was just a review article. But yeah, soon I we're going to publish a very good study these days. So what is ultrasound? So it's, I mean, very quickly. It's a sound with frequency above 20 kilohertz. So.

 **Oscar Algotsson** 10:30  
Oh, it's the. Yeah. Yeah, yeah, yeah. 'cause. That's. I didn't have time to.  
Yeah. OK.  
Yeah.

 **Muhammad Awais Sattar** 10:46  
In, in very lame in terms, it is sound that you cannot hear, so it is beyond human hearing. So it involves some key parameters. So we should have certain frequency, wavelength and velocity, yes. And if features are there safe, they are not destructive and we can do some real time monitoring.  
This one also. Yeah, they actually explained this. What we can have with the ultrasound is the following. So going back to the project again, so OK, we have established so we can use ultrasound and we can.  
Have some information from the leaves what kind of information do we need so when we talk about and when we see the crops the the only issue is the crops they are destroyed by. The only thing that is test.  
When there is an infestation on this so we can use ultrasound to detect the best and the best thing is I mean what what really happening these days is the following so.  
When the farmer, he understand, he or she understand what kind of sorry their crop is infested. So it is already the time over for them. So, so they they cannot save the crop at.  
At the level when the physical symptoms starts to appear, so we can use ultrasound because it's it's on cellular level and the depth of ultrasound is very good. So we can use ultrasound to detect the pest very early.  
So before it destroys the crops of the farmers can have some kind of.  
Information before the the the damage happened so so this is what we are trying to do and what we have studied and what we have. What information do we have right now is when there is a best infestation. So what really happened is that.  
Pest actually stops the ability of the plant to hold the water, so that's that's that's the biggest thing and then it dries out and and everything finished. So then then we we can go step by step. So first we have to see if we can find the water content.  
Using ultrasound, so in the research we are on this this level right now. I mean the best will come later on. But right now we are on this level, so we can use ultrasound to detect the hydration station. This of the of the leave of the plant that we.  
We are working on so how we can extract it? We have different parameters so we have peak to peak amplitude. Well then we record the ultrasound data we have peak to peak temperatures time of flight spectrum amplitudes, transmission coefficients and then we have the power law exponents as well.  
So we we we can really see all these parameters to see which one is the greatest one to understand the hydration. So yeah, this is the device we use. We we don't have it in house here we are collaborating with.  
Spanish partner and they have this device, but yeah, we have we sent them samples and everything so they they record the data and we process it here right now I I ordered a device like this I have it here but we we didn't started the experiments yet.  
But soon we are going to not. Right now we have in House system as well. So what we have done is that we started some potatoes. So why potato soup I mean again Sweden, potato major crop yeah. And I mean this this will be very good for Irish and you and Swedish yes.

 **Oscar Algotsson** 14:23  
Yeah.  
That's.

 **Muhammad Awais Sattar** 14:28  
The pretty days is is the the best, best, best prop out there? I mean and I mean the regardless of the funny things, the major thing that we really need to see here is that potato is the most important crop and it is the most.

 **Oscar Algotsson** 14:33  
It's good.

 **Muhammad Awais Sattar** 14:47  
It is the crop that is most affected by the best as well, so.

 **Oscar Algotsson** 14:52  
OK.

 **Muhammad Awais Sattar** 14:53  
That's why we have chosen potatoes. So what we have done is that we have a healthy plant. We try to see, OK and with healthy plant you mean it is holding 100% of the work. So I mean if the leaves are nice and shiny, so and they are not try. So we we really think that's.  
100% water. So we start measuring from that point till it is dry. So we we usually dry it with the ovens and everything. So to see how how, how well we we can understand this so.  
Yeah. I mean, they are much more details that that I can give it to you. But right now, for the sake of interview, it's it's something very easy for you guys. So we have it leaves and here you can see on the X axis there is relative water content.

 **Oscar Algotsson** 15:32  
OK.  
OK.

 **Muhammad Awais Sattar** 15:46  
So one is the case where the plant is holding 100% of the water and .086 we we we call it 2 wheel loss points. After that it is not the plant is not going to hold the water anymore and it is going to die.

 **Oscar Algotsson** 16:03  
Mm-hmm.

 **Muhammad Awais Sattar** 16:03  
So if you see all the curves, it really shows you. OK. So I mean this this point is full healthy leaf and this and then we start to dry. So when we keep on drying, I don't know if you can see my mouse cursor or no yeah if if you see here.

 **Oscar Algotsson** 16:18  
Yeah, you can see you can see.

 **Muhammad Awais Sattar** 16:21  
We we see a very nice downward trend out of it. So we we can see how the plant is losing the water and this is what we are we would we we expect to find, yeah, I mean peak to peak up issue was the.

 **Oscar Algotsson** 16:34  
Move.

 **Muhammad Awais Sattar** 16:37  
That's one out there that we have studied so far, but but if you see the time of flight, we can we can always see. So there are some jumps here which are very natural and we cannot avoid just because it's a biological tissue. So time of flight, we see a reduction in both parts for example.  
In the spectral extritudes at bit of high frequencies around 650 kilohertz, we see very nice downward trends as well as in the transmission coefficients. We can see nice downward strength. So I mean, why we are seeing all of these things? We are trying to discover which?  
Strange. The potato is going to resonate and which range is going to be fine for our future experiments as well. So with this study we we know that the best results we can find is around 606, fifty kilohertz. And then we can see the.  
Downward so we can train a machine learning model or PS.

 **Oscar Algotsson** 17:36  
Yeah. Is this frequency very specified to the plant? So in this case the potato plant or?

 **Muhammad Awais Sattar** 17:42  
Yeah, yeah, yeah, this, this, this is really basically for for this this particular instance, this is for it is it is frequency dependent of course. But the plan for the future when we are going to do some deep learning models is not only for potatoes for different plants. And we have to really find.

 **Oscar Algotsson** 17:49  
Yeah, 'cause you.

 **Muhammad Awais Sattar** 18:01  
One frequency which which can work for many plant species of course then accuracy will not be let's say very good with potatoes and for example a coffee plant. But then you can have some information out there that that, yeah, there are two situations right now. One is to have.

 **Oscar Algotsson** 18:14  
Yeah. OK.

 **Muhammad Awais Sattar** 18:20  
One frequency band in which we can operate, the second one is that we can.  
We can, we can suggest which frequency band that particular plant is going to resonate with. So so that's that's that's that's the main thing that we are trying to do. I'm not really sure how things will go in the future, but that's the thing. So something is is it's very nice here. This is something that you are not seeing.

 **Oscar Algotsson** 18:36  
OK.  
Thank you.

 **Muhammad Awais Sattar** 18:47  
In the other graph I I I'm showing you very downward trends from the full RWC to downwards, but here in in the power lock coefficient I mean then it's mathematics. This end should be rising. If you want to see the the hydration of the planets. But The funny thing and not funny is the the.  
Major novelty of our study is the following. So in all the biological issues, this strange is between zero to two. But here if you see we are finding results at 2.82 point 6 which is not common with with the biological tissues these days.  
Sorry, not these days with the literature, but we we have discovered that the plants basically have higher magnitude of, for example, more than two two this this range is something that we we really.  
Discovered during this time, so it is not in the literature these days and this is something a very new discovery that we are going to look forward to why it is important. It is important because this, this this is really basically.  
The failure to understand the biopsy of the plants as well. So in the human tissues this this is always bounded between zero to two. But in the plant it is basically more than two. So we don't have the high range of it but with few other experiments we have found. So it's it's in the plants this strain should stay green.  
03.  
So this is the main novelty of our work. Yeah, we have these collaborators, which we worked with. Yeah, and that's that's pretty much it from my side. And now now I can take.

 **Oscar Algotsson** 20:34  
Yeah.

 **Muhammad Awais Sattar** 20:36  
That's my niece. Your question as possible. Yes, please go on. Yeah.

 **Oscar Algotsson** 20:40  
Yes.  
Yes. So I guess we can start with how has the research gone, do you think like have you made any big strides that you feel like made a huge impact so far?

 **Muhammad Awais Sattar** 20:58  
Yeah, that's that's that's main impact. I mean, nobody have studied for example plants, especially the potato plants with ultrasound. Ultrasound is very, very new in terms of.

 **Oscar Algotsson** 21:07  
Mm-hmm.

 **Muhammad Awais Sattar** 21:11  
Agriculture. It is worldwide known for process control and everything, but again it nobody have used it for the plants. So we are really proud of it. Yes, people have done it for for a different lead sites for.

 **Oscar Algotsson** 21:21  
OK.

 **Muhammad Awais Sattar** 21:27  
Coffee. But that that is a step down. I can say with where we are. So they are only trying to monitor the hydration, but we are trying to do the health screening of the plant. So yeah, this is where we need our idea. This is what we are doing and we're really proud of it.

 **Oscar Algotsson** 21:46  
Yeah, it seems like a really good study that could provide a lot of help to farmers in the future. A question that arose is do you know why they haven't done it earlier? Has the technology just not been available to be able to use ultrasound on?

 **Muhammad Awais Sattar** 21:50  
Mm-hmm.  
Yeah.

 **Oscar Algotsson** 22:04  
Plants in this regard or.

 **Muhammad Awais Sattar** 22:08  
I mean, I think it's a bit bit funny. I mean they they're they're using hyper spectral cameras for this one. So they have mounted cameras that they use to to have this information, right? The penetration depth is not as good as ultrasound as well, so.  
I don't know exactly why they haven't used it before. There there was a company who who used to.  
Detect the moisture content in the soil. So till the moisture content they have done it but for the full plant screening we are at the point resolved. So yeah. So the technology is there in agriculture, it is really used these days but.  
Yeah. The technology started somewhere in, in I think so in Technical University of Delft. So they used to monitor the moisture in this in. Yeah. And then we are the one who tried to extend it to the health screening of the plant, so.  
Majorly on the plants, this is the first system that you're going to see.

 **Oscar Algotsson** 23:14  
OK. Yeah.  
When I was going over your earlier research, you have been correct me if I'm wrong. You've been there a bit with AI and I assume there is some form of neural networking or transforming in the current project.

 **Muhammad Awais Sattar** 23:26  
Yeah.

 **Oscar Algotsson** 23:33  
Umm.

 **Muhammad Awais Sattar** 23:33  
Yeah, that's that's that's the main idea. I mean, when you're going to extend this project to props and plants and when you are going to particularly say, OK, this part is infected. So we cannot say without having any machine learning model or a particularly learning model involved in it, so that that.  
That's a major thing that we are going to develop in the future. So right now collect as much data as as we can and then we can try to build up a deep learning model or machine learning model. My my idea is not to go to deep learning, to be honest. That will be a overkill because that's textual data, just a pneumatic data of some simple machine learning model.

 **Oscar Algotsson** 24:00  
Yeah.

 **Muhammad Awais Sattar** 24:13  
Yeah. I I I really work with AI. I've explored in AI as well, but something that I really love is instrumentation and AI. So I'm trying to combine both.

 **Oscar Algotsson** 24:23  
Yeah.

 **Muhammad Awais Sattar** 24:26  
I think so. You, you you have a question. You rose your. Yeah.

 **Oscar Algotsson** 24:29  
What this like the goal with the this study, what do you hope to achieve?

 **Muhammad Awais Sattar** 24:34  
Study.  
I mean, in the longer than if you see the five year plan is that we are going to have a very small ultrasound just user mounted on a robot and it is going to scan the whole field that's that's that's the major goal of it.

 **Oscar Algotsson** 24:53  
Hmm.

 **Muhammad Awais Sattar** 24:55  
Right now we are in the early steps of it. So yeah, that if it's want to know the final goal, final goal is to robot mounted with ultrasound system go and scan your field and give you some data that's that's that's the major goal of it.  
But right now, I mean, for these two years that I I I'm hired and working on this.  
Is to have at least framework that actually help us to.  
Models, for example, to help us to understand, OK, so now there's going to be a best infestation. Do your things, pray it and yeah, we we can have this information available.  
Before it starts to make any kind of damage.

 **Oscar Algotsson** 25:47  
Yeah.  
None.  
Maybe dialling it back a bit, do you enjoy using AI in your spare time? Do you do you use AI like chachibiti Gemini OK.

 **Muhammad Awais Sattar** 26:00  
Of course, of course. I mean, yeah, the The thing is, you cannot avoid it right now. And you can save a lot of time as well. So it is all about the fact that how you are using it.

 **Oscar Algotsson** 26:09  
Mm-hmm.

 **Muhammad Awais Sattar** 26:17  
I mean the only thing that I I really don't understand these days, it's why people are not adopting it. It is like Wi-Fi, they are using Google and why they are not using any kind of chargeability or or any LM that is out there that can give you information. Of course there are.  
Some problems with with these systems these days. I mean, yeah, let's they hallucinate, they give you wrong information. Yeah, you can. You can talk to a chip T or, for example, a Gemini or something and then you can tell the model. OK, I want.  
Particular result on this one and you can there is a bias. What I'm trying to say. So yeah, if you know how to operate well, if you know how to write good commands. So by you are not adapting it, you should adapt it. But in research I mean.  
What I I really feel is if you're writing a paper and if you want AI to write your whole paper, that will be very bad for you because you're not going to be creative anymore, so you will be a dumb person to be honest. So if you, if you ask. Yeah. Of course, if of course.

 **Oscar Algotsson** 27:26  
None.

 **Muhammad Awais Sattar** 27:28  
Well, what? What I really do is I I write, I write everything, and then I ask or or something to find the errors in my English grammar.  
Or suggest something that I I for example missed out. So how can I improve this so so these are the things that I I really used it for? Yeah of course when I'm stuck in a certain formula I also use it when when my code is not working very perfectly. I can also use it so yeah.

 **Oscar Algotsson** 27:53  
Hello.

 **Muhammad Awais Sattar** 28:01  
You should.

 **Oscar Algotsson** 28:02  
Yeah.

 **Muhammad Awais Sattar** 28:02  
That's what I think.

 **Oscar Algotsson** 28:05  
Seems like a very good, well balanced take during your research. In this current the agriculture and basically the plants. How does the typical working week look for you? Like what's?

 **Muhammad Awais Sattar** 28:08  
OK.

 **Oscar Algotsson** 28:22  
What's involved in the process? Is there a lot of reading or?

 **Muhammad Awais Sattar** 28:24  
Yeah. I mean, yeah, of course it it. It's always starts with reading. So your day is going to start with reading. I mean, I mean the the last day that you have ended actually you ended with something you're stuck with and then you don't have the solution for it right away. And then you start.

 **Oscar Algotsson** 28:30  
Yep.

 **Muhammad Awais Sattar** 28:43  
Finding the answer for it. It involves reading. It involves too much coding, it involves writing. It involves everything. Yes, the yeah, the reading is the the major part of it. So. So you try to find what other people have done and the.  
And then you you then you don't find anything that the people they have they redone then you still start to think what we can do and then yeah you can bang your head over a wall I think so a week or two and then you you you can find some answers.  
The search is very funny. I mean, there are few days when you have you. You have achieved something and you have sense of pride and and the next day you you feel you haven't done anything and then you'll see a start from the 0.

 **Oscar Algotsson** 29:32  
Yeah.

 **Muhammad Awais Sattar** 29:34  
But it's it's it's it's like this. It's happened now. So anything when in the research, so you're no one day is same. So everything everything is every day is not like the day before. So sometimes you are just nice and easy and then sometimes you you cannot even sleep at night so.  
Thinking about it, this is the time.

 **Oscar Algotsson** 29:55  
Yeah. OK. Something you touched on a little bit is you feel like a lot of people and the companies are very slow to adapt AI and in that regard, do you feel like in general that?

 **Muhammad Awais Sattar** 30:07  
Mm-hmm.

 **Oscar Algotsson** 30:13  
Industries and companies in Sweden in particular, are trying to get involved with AI. Or are they still like, scared to jump on the bandwagon?  
Yeah.

 **Muhammad Awais Sattar** 30:27  
See I mean.  
If, if, if we talk about today 29th of September to 25, even if they are not adapting it, they are thinking about it.

 **Oscar Algotsson** 30:38  
Yeah.

 **Muhammad Awais Sattar** 30:38  
Yeah. So.  
I mean it is like for example, the COVID vaccination. So when when it started, everyone was reluctant and then everyone got fixated. So it it is, it is on the same level. So people, they are not sure if the eye is good or bad for them but.  
Of course it is going to be very good for them. So yeah, the the the major loss is for us because there will be no.  
This time, for example, creative jobs that people use to create posters and presentations and everything they used to hire a person for that. But these days you can do it with single prompt. But yeah, there will be a job loss, but every company is going to adapt it. I I I don't think so. Every the companies they are reluctant.

 **Oscar Algotsson** 31:19  
Yeah.

 **Muhammad Awais Sattar** 31:28  
I think so. They are not sure of these states. So what I mean the question is how AI can help them. So they are trying to figure out this right? I I because if if you see Deloitte and.

 **Oscar Algotsson** 31:39  
Yeah.

 **Muhammad Awais Sattar** 31:44  
The big companies, for example, I particularly said about daylight because it's a auditing firm and they have now a very big AI section in which they hire coding staff and everyone and then and then if you ask me, OK.  
For me, I was really surprised to see Deloitte doing all of the AI because what we really think of Deloitte is they are going to open the lectures and they are going to find the discrepancies in the records. But nowadays they are having.  
They are to helping their own tools to do all these kind of things. So yeah, the companies, they are going to adapt its own already later.

 **Oscar Algotsson** 32:25  
Yeah.

 **Muhammad Awais Sattar** 32:25  
You cannot ignore Google and you cannot ignore AI. That's that's for sure.

 **Oscar Algotsson** 32:30  
Yeah. Going back to your current research in agriculture again.  
What do you think is going to be the biggest in terms of application? Do you feel like as soon as you have the technology ready to?  
Sell or implement to farmers. Do you think they're willing to adapt to it? Because sometimes people want to stay with the old ways and so forth. It's a bit of a.

 **Muhammad Awais Sattar** 33:07  
Yeah, that's that's that's that's basically an extension of your last question, I think so. So why companies, they are not talking to, I mean they they are used to what they they are used to do. Yeah, that's that's a really nice question but.

 **Oscar Algotsson** 33:14  
Yeah.

 **Muhammad Awais Sattar** 33:24  
Again, we really need to create the awareness. We really need to create how effective it can be and how we can do it. We can publish, we can have some events on it and we will try our best and and and the best and.  
Something that we really need to do with all our best is we really need to have this device in a very low cost budget so everyone can afford it. So if we are able to do this and of course the people they, they're going to adapt sooner or later.

 **Oscar Algotsson** 34:01  
Yeah, just hearing it from my perspective, it sounds very obvious where you should want to adapt this technology. But yeah, people have different motives.

 **Muhammad Awais Sattar** 34:10  
Yeah.  
Yeah, of course. Of course. Of course, of course.

 **Oscar Algotsson** 34:15  
Yeah.

 **Muhammad Awais Sattar** 34:17  
So what you guys are trying to do when we have your first semester students in Ms, you're doing a masters.

 **Oscar Algotsson** 34:17  
All right.  
Over.  
We're currently doing. We just started out our first year doing civil engineering in the computer science, I think is the right terminology so.

 **Muhammad Awais Sattar** 34:31  
Mm-hmm.  
Yep.

 **Oscar Algotsson** 34:41  
We kind of got this assignment from one of our professors to interview someone who's done research and is involved in research fields in particularly at lilio Technisk University.

 **Muhammad Awais Sattar** 34:49  
Mm-hmm.  
Mm-hmm.

 **Oscar Algotsson** 34:54  
And.

 **Muhammad Awais Sattar** 34:55  
And and you are at masters level not the masters level. And the second cycle if if yeah.

 **Oscar Algotsson** 35:00  
We are at we're literally four weeks into studying. We're very new, yeah.

 **Muhammad Awais Sattar** 35:06  
Yeah.

 **Oscar Algotsson** 35:09  
So we're very technically low level, but I think I can only answer for myself. I have been in reading up on a lot of AI and a lot of development in that field, so I'm quite confident in those regards. But it's.

 **Muhammad Awais Sattar** 35:12  
That's OK.  
Yeah.  
So what are the aims? I mean, what are the aims? What are the goals after your study? So this is something I'm really interested in.

 **Oscar Algotsson** 35:25  
Sorry.  
And.  
Generally I like low level hardware stuff. There isn't a lot of that going on right now. I understand it, but hope.

 **Muhammad Awais Sattar** 35:37  
Half. That's nice.  
Yeah. And then then then you will be very safe with from the curse of AII mean. I I cannot see AI designing hardware these days. Yeah. Yeah. But yeah, after two or three years, I don't know, but yeah, that's that's really interesting. Sorry. Continue.

 **Oscar Algotsson** 35:58  
No worries. Yeah, but that's kind of another question. Do you want to answer first what you want to do with your? To be honest, I don't know. I just know I like IT. Technology, AI, hardware, software.

 **Muhammad Awais Sattar** 35:58  
Yeah.  
Ha ha.  
Mm-hmm.

 **Oscar Algotsson** 36:16  
That's working. Yeah, I like it all. So I'm not maybe like infra security, but I'm not sure. Yeah.

 **Muhammad Awais Sattar** 36:19  
That's nice, yes.  
Mm-hmm.  
Yeah.  
Cyber security is a very good, good way to go. I mean you, everyone should know it and this I mean these days the only people they're only talking about AI, but soon they are going to talk. They have started to talk about the security information security.

 **Oscar Algotsson** 36:30  
Yeah, yeah.  
Yeah.

 **Muhammad Awais Sattar** 36:47  
Oh, you're going to do it. So if you can develop some skills in, for example, information security, cyber security, it will be ending very good in the future.

 **Oscar Algotsson** 36:58  
Yeah, makes sense. I'm. I'm not the word. I'm not the word.

 **Muhammad Awais Sattar** 37:05  
8.

 **Oscar Algotsson** 37:05  
Yeah, I don't really know yet, but I think it would be really cool to work something with AI because because it's such a big thing right now and people don't really know where it's heading. So it would be cool to have an impact on.

 **Muhammad Awais Sattar** 37:11  
Mm-hmm.

 **Oscar Algotsson** 37:22  
How AI is used in the future? Yeah.

 **Muhammad Awais Sattar** 37:25  
Yeah, good. All of you guys.

 **Oscar Algotsson** 37:30  
Do you mind if I ask a question that's a bit out of nowhere? But Sam Altman, we all know him. Probably a couple of weeks ago said the AI bubble was a. That is just a bubble right now.

 **Muhammad Awais Sattar** 37:30  
Yeah.  
Sure.  
Yeah, I mean, technology is a bubble. If if you ask me, I mean do not have related, it is going to be replaced by something. But yeah, I mean see the current form of AI that we are going to see, we are not going to see in the future as well that's that's that's.

 **Oscar Algotsson** 37:46  
And.  
Yeah.  
Yeah.

 **Muhammad Awais Sattar** 38:05  
For sure, I mean the height of AI we have seen AI vendor in the past as well. I mean in 60s and 80s. There was 0 research on AI. So maybe there, there, there there is a vendor in the future as well. So we we really never know. But the tools that they.

 **Oscar Algotsson** 38:13  
Yeah.

 **Muhammad Awais Sattar** 38:22  
That are being developed or that are already developed, they are going to stay. So I think so you should be focused towards learning that. Do those particular tools and if you really want to dive deep into AI, then you really know how to code.  
So.  
Have some skills in coding. I mean everyone is going to say OK, so the coders, the, the, the, the programmers, they are going to be replaced by AI. I'm not very sure about it because if if if you really ask AI to to write a code that that code is particularly very stupid to be very honest. I'm really sorry.  
But yeah, but you really know, for example, what is the data structure? So you really need to know the basics of programming and then then you can develop AI or maybe something in the future that that you are going to develop.  
For sure.

 **Oscar Algotsson** 39:12  
OK. Yeah.  
We have run a bit over time here, but do you mind if I? OK. Thank you. I what was my question? Do you have a question?

 **Muhammad Awais Sattar** 39:20  
It's OK, it's OK.

 **Oscar Algotsson** 39:30  
I don't know. I have one that's a bit. I feel like it's relevant during your time studying your Masters and PhDs. Do you feel like your current research is backed a lot by your earlier studies or have you?

 **Muhammad Awais Sattar** 39:37  
Mm-hmm.

 **Oscar Algotsson** 39:50  
Needed to do a lot. Have you needed to add more knowledge after you for instance, now is very particularly studying our agriculture and vegetables and fruits.

 **Muhammad Awais Sattar** 40:06  
Yeah. I mean, my miss was backed, really regarding what would have been studied previously. I mean I designed a adaptive fuzzy controller, adaptive fuzzy PD controller. So for the quadrotor system. So quadrotor was there adaptive fuzzy was there and.

 **Oscar Algotsson** 40:06  
Rich foods.

 **Muhammad Awais Sattar** 40:26  
PID was there, but I I really just combine them and make something new and that's what we engineer we we really do we we we we have chunks of technologies we combine them and we create new things that's just what that's my definition of engine like I don't know.  
Because it is the job of physicists and chemists to discover something new or new hardware or something. We we are just plug and play kind of people. So yeah. But but for the PhD, of course I was involved in a very big project at that time and.

 **Oscar Algotsson** 40:42  
Hmm.

 **Muhammad Awais Sattar** 40:58  
At that time we we really created new knowledge.  
I mean, during my PhD my the modality I was working with was electrical resistance tomography and they used to rely on images. But then I I presented a new algorithm that doesn't rely on images and.  
Just particularly rely on data and with that data we used to have similar information that a single image can give. So yeah, for for your PhD you should be aiming to create new knowledge for your masters. It's OK don't tell your professor this, but yeah, that's.

 **Oscar Algotsson** 41:38  
OK.

 **Muhammad Awais Sattar** 41:40  
Yeah.  
I mean, creativity is always, always something that that you are going to do if if you if you really want to contribute something to science and then you can do it at any, any level. So if you really want to.

 **Oscar Algotsson** 41:42  
Uh.

 **Muhammad Awais Sattar** 41:57  
Just pass the degree and get it all and you can have, I mean there should be some kind of novelty which which I I really usually tell the students there should be, I mean very minor, very basic but something.  
Something there that that is not. For example, if if a model is performing 86% accuracy on a particular health, for example in MRI MA segmentations, so you you should, you should try to make it to.  
8788% so have some kind of novelty in that you can improve that algorithm that that can be novelty.

 **Oscar Algotsson** 42:36  
None.  
Yeah.  
I have another question regarding.

 **Muhammad Awais Sattar** 42:44  
Sure, sure, sure, sure.

 **Oscar Algotsson** 42:47  
A bit more as a researcher per southeast, has there been any research topic you would have loved to explore but haven't got an opportunity to do so yet?

 **Muhammad Awais Sattar** 42:51  
Uh-huh.  
How many? Oh, there are. There are many. I mean that's that's that's the third part of being a researcher. So. So you really want to discover many things, but then you are hired on a particular project to do that particular time.

 **Oscar Algotsson** 43:01  
OK.

 **Muhammad Awais Sattar** 43:16  
So yeah, I mean.  
I cannot say that I haven't got the chance to work on it because here in Sweden you, Sweden, you you create your own chances. So you write a research proposal for that and you put it somewhere and then you get the money to start your research.  
So at least I'm in in the process I I have submitted a few proposed, so hopefully if I get funded I can do that particular thing as well. So I I I am bit focusing, I mean my my previous application was oil I I I I love oil and gas industry but now.  
Oh, I I think so. Yeah, be sure.  
The client, the the the Earth less so. That's why I'm I'm moving to the sustainable things these days. So yeah. So. So yeah, the data there are things that I would like to do but still didn't get the chance. But in the future I will I hope so.

 **Oscar Algotsson** 44:02  
I know.  
Yeah.

 **Muhammad Awais Sattar** 44:14  
Uh-huh.  
Yeah.

 **Oscar Algotsson** 44:19  
Do you have any questions regarding the research? No, no, I think I'm not the do you have any finishing words of encouragement to the three young students?

 **Muhammad Awais Sattar** 44:26  
Mm-hmm.

 **Oscar Algotsson** 44:34  
OK.

 **Muhammad Awais Sattar** 44:35  
Yeah, just, just, just focus on whatever you love. That's that's that's something that I I really want to say I mean.  
Few things that that you really that's that's that's the practical thing. So it's OK to change your research or your career path once or twice in in, in your in your carrier span it is it is perfectly all like don't hesitate to do it. So I mean if you're getting a good opportunity and that is but outside of the things that you like.  
So take that. Maybe this particular one is is more interesting or or more futuristic for you in the future. But yeah, don't don't try to stick it. We stick on one position, diverse your portfolio and be expert of one thing. That's that's something very controversial that.  
I'm saying so I I'm saying at the same time we expert of one thing but you have you should have a diverse portfolio. So what I'm really trying to say that for example if you are specialist in AI, you should have information of information security, cyber security.  
Cloud and everything. So you should have a diverse portfolio, but you can be focused only on AI. So you can implement AI on these these particular things, but you should have knowledge start I mean these days stealing is is is really really fun to do because.  
Now you can summarise whole 100 page book to four or three pages. You just upload it and just ask for the summary. You try to read as much as you can and don't try. Don't you ever try to.  
Get the shortcut so if you are learning a new language, learn it properly. Do the traditional V code, delete code, do the challenges. Don't particularly rely on AI, but when you are done, I mean when you think you have attained a certain level, then you can use it as much as AI as possible.  
So that's that's something that's definitely why it's not a word of encouragement, but yeah.

 **Oscar Algotsson** 46:40  
Yeah, I I appreciate it. It's very insightful.

 **Muhammad Awais Sattar** 46:43  
Yeah.  
So if if you really want to have a thesis with us, we have lots of data that you can process in the future, right? We are going to produce lots of data. If you want to come to us, you have my contact. You can come to us anytime, not only for direct culture we can.

 **Oscar Algotsson** 46:51  
If.

 **Muhammad Awais Sattar** 47:02  
In some machine learning models with you, we have a meet quality assessment images which you can segment as well. We have computer vision kind of problem these days as well. So you're more than welcome even for interest just to see what we are doing.

 **Oscar Algotsson** 47:20  
Yeah.

 **Muhammad Awais Sattar** 47:21  
Yeah.

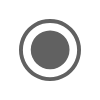
 **Oscar Algotsson** 47:22  
Well, thank you for taking the time to talk with us. We're very grateful.

 **Muhammad Awais Sattar** 47:27  
Yeah, it's OK.

 **Oscar Algotsson** 47:29  
And I hope your research goes well and you have a good rest of your day.

 **Muhammad Awais Sattar** 47:29  
Here we go.  
Yeah.  
Yeah. Thank you. Thank you so much for the opportunity as well. See you. Bye, bye.

 **Oscar Algotsson** 47:35  
Yeah. Thank you. Thank you very much. See you.  
That's the bomb.  
So \*\*\*\*\*\*\* you have to cook the other.

 **Oscar Algotsson** stopped transcription