Michael Holtz:

Very well.

Vivian Egan:

I can't say doom scrolling comes up a lot in the stuff I look at.

Michael Holtz:

Sure, sure.

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We haven't done a study yet where I've been like, "Hey, can you look at some current event memes while I ask you to respond to this?" I would like to do that. That'd be fun.

Michael Holtz:

There's a research project in the making right there.

Vivian Egan:

Yeah. The next thing I'll propose.

Michael Holtz:

There you go.

Speaker 3:

This is the ORISE Featurecast. Join host Michael Holtz for conversations with ORISE experts on STEM workforce development, scientific and technical reviews, and the evaluation of radiation exposure and environmental contamination. He'll also hear from ORISE research program participants and their mentors as they talk about their experiences and how they are helping shape the future of science. Welcome to the ORISE Featurecast.

Michael Holtz:

Welcome to the ORISE Featurecast. As ever, it is me, your host, Michael Holtz in the communications and marketing department at the Oak Ridge Institute for Science and Education. And as we do often on this show, I have the opportunity to talk to an ORISE research program participant. And my victim, so to speak, this episode is Vivian Egan. Vivian, welcome to the ORISE Featurecast.

Vivian Egan:

Hi. Thank you. It's exciting. I've never been on a podcast before. But I've often been like, "I want to be on a podcast. I want to start a podcast."

Michael Holtz:

Well, here you go. Here's your opportunity. You can see if you like it and maybe do your own thing.

Vivian Egan:

Maybe.

Michael Holtz:

So thank you for being here and for giving me the opportunity to talk about your ORISE research program opportunity. You are stationed at the AFRL, which is the Air Force Research Laboratory. Tell me about your research. What is it that you're focused on?

Vivian Egan:

One of my big focuses right now has been time series, which doesn't tell a whole lot to anyone. Time series is looking at data across a time period and using historical data to see what it can tell us about the data set or how we can use it to predict future values. And there's a lot of different stuff you can do with that.

So I've been doing a lot of different things with that. I do a lot of data analysis stuff. So that's kind of been what I've been doing. A lot of sitting at a computer, coding, fun things like that. If you looked at my day to day, I'm not that exciting, but I think the stuff I do is cool.

Michael Holtz:

So when you're doing this, are you looking at, I don't know specific behaviors? I guess, what kind of data are you measuring from a time perspective?

Vivian Egan:

So I look at human behavioral data, which is not what time series typically looks at. Time series normally is used a lot with financial data and environmental data, which is what makes what I do kind of cool in my opinion because I'm one of the only people that really does it, to feed my own little ego.

When I started doing it, there was maybe three or four papers I could find that talked about it with human behavioral data. So that's been one of the fun things about it is trying to figure out how to make it fit with my data. But yeah, I do human behavior. A lot of multitasking behavior and how fast people react to certain things.

Michael Holtz:

Oh, cool. Okay, I got it now. So basically just that sort of stimulus reaction time series?

Vivian Egan:

Yeah. I feel like I'm really bad at breaking down what I do.

Michael Holtz:

No, that's okay.

Vivian Egan:

In normal people talk. I spend so much time writing papers, writing my thesis. That's actually what I spend all my time doing. So I'm so used to having to write fancy like that, that I'm like, "I don't know how to explain it to normal people."

Michael Holtz:

So basically, if I understand correctly, if something happens to me or I hear a noise, whatever, it's the amount of time it takes to react and how I react to that.

Vivian Egan:

Yes, exactly.

Michael Holtz:

Ish? Okay.

Vivian Egan:

That's the kind of data I have. Yeah, a lot of the experiments we have, it'll be, there's something you hear, you respond to it, we log how long it takes. Only we have multiple different things going on because why not make you multitask a bit? That's interesting. I do stuff-

Michael Holtz:

And that's reality, right?

Vivian Egan:

Yeah.

Michael Holtz:

We are having this conversation and at the same time, my dog is walking around panting in the background. Multiple things are always occurring around us.

Vivian Egan:

That's what I'm going to do in my doctorate, is a lot of multitasking and fatigue. Because that is just what's always going on all the time is we're doing multiple things and it makes you tired. It makes your brain tired.

Michael Holtz:

And I wonder just only because it's current events ish related, a lot of us spend a lot of time doom scrolling.

Vivian Egan:

Same.

Michael Holtz:

And I'm sure that has to play into a role into the exhaustion, right? Because we're sort of always after that dopamine hit and eventually that catches up with us and all of those things.

Vivian Egan:

Yeah, I'm not very good at that stuff. But I know that from the way I look at it, you have limited cognitive resources that you can use, so you only have so many. So multitasking, every task that you do kind of uses up the limited resources you have. So you only have so much to spread at so many things.

So if you're doom scrolling while doing something, you're kind of allocating some of the resources to that when you could be using it on the other stuff you're doing. So yeah, it would.

Michael Holtz:

Very well.

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Sure, sure.

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We haven't done a study yet where I've been like, "Hey, can you look at some current event memes while I ask you to respond to this?" I would like to do that. That'd be fun.

Michael Holtz:

There's a research project in the making right there.

Vivian Egan:

Yeah. The next thing I'll propose.

Michael Holtz:

There you go. So, Vivian, when did you become interested in science? Has that always been always been a thing for you?

Vivian Egan:

Yes. I was a really nerdy little kid. I used to do math for fun. When I would get impatient, my family would have me do math in my head for fun, like my times tables and long division and stuff. So it's kind of always been my thing.

Michael Holtz:

Gotcha. Interesting. I'm a communicator.

Vivian Egan:

It scares most people.

Michael Holtz:

Yeah, I was going to say I'm a communications person and math is definitely not my strong suit, but I'm also learning that that's part of the educational environment too. If you're taught to fear math because you're supposed to be correct every time you do it, right?

Vivian Egan:

Yeah, I did. I have seen that. That if you're taught that you always have to be correct, you'll start fearing it. I feel that way about spelling though. I used to.

Michael Holtz:

That makes perfect sense.

Vivian Egan:

I was the kid that would cry learning to spell instead of math because I was scared of being correct on my spelling tests.

Michael Holtz:

Okay, I get that.

Vivian Egan:

So I was always a science kid.

Michael Holtz:

See? So I'm totally the opposite then. So it makes sense that I feared math. You feared spelling and here we are.

Vivian Egan:

So just don't ask me to spell.

Michael Holtz:

Here we are having this conversation, right?

Vivian Egan:

Yeah.

Michael Holtz:

Thank goodness for spell check in Word, right?

Vivian Egan:

Yeah, no, there's still mistakes. There are still my spelling mistakes. You can ask everyone that proofreads my stuff. It's a common thing in the office that I'm not allowed to ask for help with my code until I've guaranteed everything's spelled right and the same.

Michael Holtz:

Okay. That's kind of funny, I'm not going to lie. So it sounds like whether for punishment or otherwise, your parents were very supportive of, I mean, if you were sort of timing out doing times tables.

Vivian Egan:

Yeah. I didn't really know what I could do with science, and I always kind of was fascinated with humans in general. So for the longest time I thought I was going to go to medical school.

Michael Holtz:

Really? Okay.

Vivian Egan:

Yeah. The thing is I don't really like interacting with strangers all day, every day, and I'm really squeamish.

Michael Holtz:

So blood would not be a thing?

Vivian Egan:

No. It took one week of college to realize I didn't want to go to medical school. Because I am the only one of my siblings that's graduated college and stuff, so no one really knew what to tell me to do. They just were like, "She likes science. We know that."

Michael Holtz:

Go do your thing.

Vivian Egan:

"Go do your thing." I loved Untold Stories of the ER because I like the piecing together and finding things out. So I think that's also why I was like, "Med school."

Michael Holtz:

Right. Yeah. I'm a fan of that as well. Of course, I worked in hospital marketing, so I got to hear up close and personal about some of those untold stories. Like, "Look what we found."

Vivian Egan:

I just like solving things.

Michael Holtz:

Look what we found where it shouldn't be or whatever. Vivian, if you would, tell me what your educational trajectory has looked like. It sounds like you're working on your doctoral thesis right now. So where are you in the process?

Vivian Egan:

So I'm actually doing-

Michael Holtz:

How did you get here?

Vivian Egan:

Okay. I'm doing my master's thesis right now.

Michael Holtz:

Your master's thesis.

Vivian Egan:

Actually, I defend my master's thesis end of July. So everything's great right now. Everything's really fun. So I got my bachelor's right out of high school. I did my bachelor's in psychology because I love the human brain. I took cognitive neuro in the middle of college and I fell in love with that. And I did research and I was like, "Yeah, that's what I want to do. I want to do research."

But I was kind of unsure about what I wanted to research, and I didn't really want to leave Dayton. So the mentor I had in undergrad was like, "I think you need to take a step back and kind of just get experience doing the work you want to do before you apply to grad school." So that's when I found ORISE.

And I started working with ORISE, and from there my mentor kind of helped me figure everything out. And I started graduate school doing human factors engineering because the work I do is in human factors. My mentor, she has a human factors psychology doctorate. So I was like, "Yeah, human factors, that's what I like."

So I had a friend that told me I should do engineering because I seemed like someone that liked everything about engineering, so that's where the engineering came from. He helped me figure that out. Because I was like, "I don't know about grad school, but I don't know what job to get with a psychology degree."

So I started doing some of the undergrad classes for engineering. But then when I started ORISE, my mentor helped me figure it out, and that's when I started grad school. And then she helped me a lot figure what I was doing, what I was interested in. And she helped me find and get with my advisor in graduate school who he also is great.

And all of us together applied for this opportunity called DAGSI, where you basically have to propose a research project and you end up working with someone at AFRL. And we ended up winning that, which would be the funding for my PhD, and I got to do a research project that I proposed and created.

So it was kind of a mix of what I'm interested in, what she's been interested in. Which I mean, kind of similar thing because we've been working together for three years now. And what my advisor has been interested in. So I'm going to still get to work with my mentor for the next three years that it's going to take me to get my PhD. So that was kind of exciting when we won it because I-

Michael Holtz:

That is exciting. Congratulations.

Vivian Egan:

Yeah. I didn't really want to leave her yet.

Michael Holtz:

Yeah.

Vivian Egan:

I am really sad that ORISE is going to be over, and I'm not going to be there every single day to just pop up to her desk anytime there's a problem. Or pop into Teams and be like, "Hey, this isn't working. Can you help?"

Michael Holtz:

Question.

Vivian Egan:

"Please?"

Michael Holtz:

Right, exactly.

Vivian Egan:

"Problem. I need you."

Michael Holtz:

I need your help.

Vivian Egan:

I mean, I know she'll still be there.

Michael Holtz:

Sure, sure. But you get to move on to the next big thing, which is exciting.

Vivian Egan:

Yeah. Now my advisor also gets the lovely messages of, "Hi."

Michael Holtz:

Now you get to pop in with your advisor.

Vivian Egan:

Yeah. I like to joke sometimes that they're like Mom and Dad. I'm like, "Hey."

Michael Holtz:

But it's great though that you have that kind of close relationship with your mentors. I mean, that's what a mentoring relationship is all about is helping you grow as a professional.

Vivian Egan:

Oh, yeah. I'm so grateful. They have been great. My ORISE mentor, she is amazing. She helped me so much professionally, even personally. I wouldn't have been able to do the past three years and get where I have been because I lost the motivation and the way a little bit with graduate school.

When I took that break, I didn't really know what to do, but I figured it all out and everything is all settled now. I'm excited for our project that we won the proposal for. It's kind of a mix of what we all like. It's we're going to look at the effects of fatigue on multitasking, and there's some of my time series involved.

Michael Holtz:

That's great. So you get to move forward in your research, which is always a good thing.

Vivian Egan:

Writing my master's thesis is making me so excited to do a dissertation.

Michael Holtz:

And when do you defend?

Vivian Egan:

I defend July 31st.

Michael Holtz:

Oh, my goodness. So we're recording this, audience, we are recording this on the 17th. So good vibes for Vivian on the 31st.

Vivian Egan:

Oh, yeah. My draft for my thesis is due today.

Michael Holtz:

Oh, my gosh. And here we are having this conversation.

Vivian Egan:

Yeah.

Michael Holtz:

Hopefully we won't derail your progress very much.

Vivian Egan:

No, no. It's a nice distraction.

Michael Holtz:

Okay, good. Good. Vivian, where you are today, have you had the opportunity to mentor others? I mean, I know it's early in your career and your research emphasis, but has that been an opportunity you've been able to have?

Vivian Egan:

A tiny bit, but not a lot. I am an officer at an org on campus, so I've helped some undergrads. And I mean, sometimes I help my coworkers with things. We help each other with stuff a lot. Sometimes they help me more than I help them, I feel like, but there's been a little bit.

I'm definitely excited to, as I keep going, I feel like there's definitely going to be things I can help mentor. I feel like I'm starting to gain knowledge where I can do that. I used to coach gymnastics and I love doing that.

Michael Holtz:

Cool.

Vivian Egan:

I know that's a random aside.

Michael Holtz:

I know, but I love it. That's great. I mean, it shows that you're a well-rounded individual. That you have other interests outside of the world of science and research and time series studies and all of that.

Vivian Egan:

When the Summer Olympics come on, I am sat in front of the TV for it.

Michael Holtz:

I love it. I love it. Vivian, you mentioned earlier that you are the first person in your family to graduate from college. Were there barriers to getting to where you are?

Vivian Egan:

I feel like a lot of it was just no one in my family really knew how to give me advice on a lot of things. It would be like, "Oh, I don't know what to do with this." And they're just like, "Never done that." And I'm like, "Okay."

And I feel like a lot of times I'll be talking about what I do and they're supportive and nod along, but they're like, "I have no idea what you're saying to me right now. I don't do this." And I'm like, "Yeah, I am just saying a bunch of foreign language stuff to you basically right now."

Michael Holtz:

Right. Let me try to-

Vivian Egan:

But it's just kind of always been the way it is to me.

Michael Holtz:

Okay.

Vivian Egan:

Definitely one of it was, I feel like it was a big thing when I was taking my gap year and my one friend was telling me that I should do engineering. Him and I were going back and forth because I switched my major a few times when I was going into college. And he's like, "Why did no one really tell you what major to get? No one really advised you on this? You kind of just went in blind."

I was like, "Well, I was the first one that really did this. No one knew what to tell me." They were like, "Oh, you like science, you like humans. You like the human body. What about medical school? That seems right. You want to go farther than a bachelor's?" I was like, "No one really knew. Your dad's an engineer. You are interested in all the same things. He knew to tell you to be an engineer. He had a binder for you about college." No one knew to tell me that.

Michael Holtz:

I gotcha. Okay. Interesting. But also, I mean, it sounds like unwittingly you followed in your father's footsteps.

Vivian Egan:

Yeah. Well, he did, but I followed in my friend's footsteps. Yeah, kind of.

Michael Holtz:

Oh, your friends? Yeah, for sure. Because right, sorry, you didn't have someone to say, "Here's your binder."

Vivian Egan:

Yeah, no, I didn't get my college binder. No. I remember in that conversation I was like, "Well, no one made me a binder."

Michael Holtz:

Right. I had to figure this out all by myself. But it sounds like, I mean, you've done well. And with the support of friends and your mentors, you're making huge strides and studying something that seems to be A, novel and important in terms of your human factor studies and time series. So that's exciting.

Vivian Egan:

Well, thank you. I like to think it's new and important. The goal is that we can get to a place where the models are good at predicting and understanding behavior. So that maybe we can have different interfaces and systems that say they could log your behavior and be able to predict before you get fatigued when you're driving.

It would be able to know when your behavior is declining and say, "Hey, you're getting fatigued. Maybe you should take a break." And there's all kinds of different applications for stuff like that. That's just the easy one.

Michael Holtz:

Right.

Vivian Egan:

But that's my goal.

Michael Holtz:

Easy, but important. I mean to know that, hey, you're having a cognitive decline moment. You might want to sit down, take a break, take a nap, whatever, and give your brain a break.

Vivian Egan:

Yeah. I feel like it would be like the Apple Watch telling me to breathe though. I'd be like, "Yeah."

Michael Holtz:

It's nap time, Vivian.

Vivian Egan:

No duh. I am tired. Leave me alone.

Michael Holtz:

Right. And you mentioned this a little bit, but tell me a little bit more about the application and the work, the research project that you've won as a particular success. I'm sure there are others, but that seems like a pretty major one in terms of being able to move on with your PhD.

Vivian Egan:

Yeah, I was really excited about it. My advisor and I had to basically write a proposal for what we wanted to do to kind of meet a topic that my current mentor put out. And we landed on looking at the effects of fatigue on multitasking performance in automated environments.

So automation's becoming a really big thing in different work environments and even starting in cars and healthcare there's a lot of technology nowadays. So we propose to do, I want to say simple, but it's probably not, people aren't probably going to love doing it. But basically having some kind of tasks that'll involve multiple different things in a semi-automated. We have a driving simulator at Wright State, I found out through all of this.

Michael Holtz:

Nice.

Vivian Egan:

That can do semi-automated driving. So basically people will be doing multiple tasks in the semi-automated driving simulator. And then there will be different times where they have to take back control of the car when they're told to, whether it be because it's raining. I did air quotes like you can see me. It's like raining. There's construction or whatever it is. So then you can also see how fast they react to taking over control. So different things like that.

And then, so we're going to have a condition where we make them fatigued. This is the part they're not going to like because I did all the research that there's different paradigms where you can make people fatigued by having them do cognitive tasks for an extended period of time. So making people cognitively fatigued because that's really how everyday life is.

You do a lot of taxing things mentally, you're tired, and then you go try to multitask in these environments. So we're going to look at how they perform when they're tired versus when they're not tired and see how performance changes. I can use the data from stuff like this. Both the data when we're making them tired, and then the data when they're in the simulator to develop my models, test my models.

We also, we have fMRI here at Wright State. So it's functional MRI. So that is not my expertise, but we are going to take fMRI before and after we fatigue people to look at the changes in their brain. We're going to do eye tracking because that's a way to tell fatigue.

So it's a lot of cool things that I'm really excited about. A lot of fun data. I love playing with data. I love doing data analysis. Don't love writing, not looking forward to that part. The writing, the proposal was a lot. I was so excited when we got it and the writing was done. I was like, "Finally, it paid off."

Michael Holtz:

Right.

Vivian Egan:

My advisor was great. I remember right before we submitted, there was a few weeks where it was like every other day I was like, "I don't know what's going on. I'm freaking out about this sentence." And he'd be like, "It's okay." And I'd be like, "I don't know."

Michael Holtz:

Is it the right one? Are we using the right words?

Vivian Egan:

Did I pick the right word? Did I spell assess right this time?

Michael Holtz:

And did I spell it correctly? That sounds amazing. And I hope, Vivian, that when your research is done that we can come back and talk about what you've learned, what the data shows for multitasking fatigue. Because obviously, as we mentioned earlier, we live in a world where we're constantly multitasking. Whether we're functionally aware of it or not, there's always multiple things happening at the same time, and it would be great to understand what that impact is.

Vivian Egan:

Yeah. There hasn't been a lot of things that look at it in a lot of really reminiscent environments of what our day-to-day is. So I'm really excited. It's going to be a long process, getting the experiment up and all that, but I'm excited.

Michael Holtz:

Very, very cool. Well, I do hope that we can have you back to talk about that when the time comes.

Vivian Egan:

That'd be cool. Yeah.

Michael Holtz:

In the meantime, I have one more question for you. Vivian Egan, what brings you joy?

Vivian Egan:

What brings me joy? Oh, wow. That's hard. So many things. So many things. I'm a very mushy person.

Michael Holtz:

Okay.

Vivian Egan:

That's quite the question. I'm a very emotional person. So honestly, a lot of things. A lot of the relationships in my life, I draw a lot of joy from those.

Michael Holtz:

Very cool.

Vivian Egan:

I made the joke earlier today, I was going to get super sentimental about my mentor and how much she's done for me and meant for me, to me. Even now, I kind of want to well up and cry just thinking about what brings me joy. Everyone that's supported me, even my cat. My cat, he's done so much. He has to sit there and be emotional support while I write, and he has a hard task.

Michael Holtz:

While you're doing all this hard stuff.

Vivian Egan:

Yeah. He tries to write and add things, but he's not good at spelling yet.

Michael Holtz:

Right. [inaudible 00:29:30].

Vivian Egan:

Yeah. So the relationships in my life, the people that have been supportive. I also love hiking and camping. I'm a very outdoorsy person.

Michael Holtz:

Excellent.

Vivian Egan:

Yeah. When I'm done with projects, I do two things. I usually get a tattoo and then I like to turn my phone off and go in the woods.

Michael Holtz:

I love it. So tattoos and hiking bring you joy. I like that.

Vivian Egan:

Yeah.

Michael Holtz:

Along with your cat and people.

Vivian Egan:

Yeah.

Michael Holtz:

I dig it.

Vivian Egan:

Yeah. When we won that proposal, I got a... It's really generic now that I'm going to say it, but I got a dragon with a sword, but it's like a girly pop dragon because it's purple and pink.

Michael Holtz:

Excellent. Well, it should be a dragon that you would want to have, right? Because it's there forever.

Vivian Egan:

Yeah. I was just joking the other day that I'm going to get one with the metric that my mentor created that we use a lot. I was like, "Yeah, I'll get that."

Michael Holtz:

There you go. There you go. I love it. Well, Vivian Egan, thank you so much for spending this time with me. It has been a pleasure getting to know you and talking about your ORISE opportunity and the research that you're working on and hearing what happens next. And as I said, I really do hope we can come back and revisit your research and what you've learned in the process.

Vivian Egan:

Yeah, thank you for having me. It was great. I was so prepared for trees. And then you said, "What brings you joy?"

Michael Holtz:

Well, we can end up, I can add that question. Vivian, if you were a tree, what kind of tree would you be?

Vivian Egan:

See, I have two answers because I use machine learning. So I want to say decision trees, but I would also be a fir tree. I love those trees.

Michael Holtz:

Excellent. Fir trees. I love decision trees. That cracks me up.

Vivian Egan:

Yeah, that's my Instagram bio is about because that one quote. So it's, "You can't see the random forest for the decision trees."

Michael Holtz:

Nice. I dig it.

Vivian Egan:

I've been thinking about this the whole time because you said the tree thing.

Michael Holtz:

Because I said. Yeah. Well, there you go. Now we've had an opportunity to talk about that.

Vivian Egan:

Yeah, I didn't want to get gotcha'd. But then you got me being sentimental and almost cry.

Michael Holtz:

Vivian, thank you so much. It's been great.

Vivian Egan:

Thank you so much.

Speaker 3:

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