

Transcript

Title: Swinburne International Webinar Series: Cybersecurity and Data Science

Presenters: Venus Liao, Dr. Jason But, Mahdi Shariatian

Year: 2020

Audio/video for this transcript available from: <http://commons.swinburne.edu.au>



Venus Liao

Good afternoon, everyone. Welcome to Swinburne Webinar Series on a Friday afternoon. My name is Venus Lao. I'm the regional recruitment manager of Swinburne University. I'm responsible for the onshore international student recruitment. I hope you are all well and safe.

Thank you for joining us today for virtual training on Swinburne cyber security and data science this is part of the Swinburne Webinar Series I'm running on the month of May to July. On your right-hand side are the panellists for today's webinar, Dr. Jason But, Department Chair from the Department of Telecommunication, Electrical, Robotics, and Biomedical Engineering, and Mahdi, the international recruitment manager from the Faculty of Science, Engineering, and Technology at Swinburne University. Jason was one of the panellist at Swinburne Web Session held the last two weeks, discussed the world's response to global pandemic with a focus on technology. The session had discuss about what worked, what didn't, and way our tech strength to keep up. In today's webinar, we will talk about the demand for new skill set in new field and the projection on emerging jobs, particularly in cybersecurity and data science.

If you have any questions during the presentation, please leave your question in the Q&A box at the bottom of this screen. At the end of the webinar, we will leave a 5 to 10 minutes to go through your questions together. If we can't answer your questions today, please feel free to contact either Mahdi or your regional recruitment managers from Swinburne University.

Without further ado, I'd like to introduce today's presenter, Dr. Jason But, Department Chair from the Department of Telecommunications, Electrical, Robotic, and Biomedical Engineering from Swinburne University. Thanks, Jason.

Jason But

Thank you very much, Venus, for your introduction. And thanks for your temporary promotion as well. But I'm the deputy department chair, not the department chair. So I don't want to scare anyone who may be actually filling in that role. And good afternoon to everyone in Australia time. And if you're anywhere else in the world, good morning or good evening, or good night, wherever you may happen to be.

I've been asked today to come and speak to you about our cyber security and data science offerings, particularly at the postgraduate level. So thank you all for coming along and listening to me and to us and to Swinburne's offerings.

So a little bit about me. I'm a senior lecturer in the School of Telecommunications and Department of Telecommunications, Electrical, Robotics, and Biomedical Engineering, where I also serve as a deputy chair. I personally teach in the telecommunications, engineering, and data networking space. I happen to be the course coordinator for the master of cybersecurity and one of the course designers of that course. My teaching areas of interest involve internet protocols, Unix systems, performance of the internet and software defined networks, and my research skills or research focus also lies in all those areas, excluding Unix systems, which is really the tool that I use to do a lot of the research that I spend all my focusing. I've been at Swinburne for roughly 13 years now. And we've certainly continued to develop and grow our products and our services to meet current requirements and make sure that we're always up to date in what we're doing here.

So I thought I might actually start off by talking to you a little bit about cybersecurity data science. So I'm hoping that particularly cybersecurity everyone knows if not exactly what it is, you know that it is in the news right now. Everyone's talking about it all the time. And it continuously does make the news. A week doesn't go by where there's not multiple articles in the print news or on the online news where some cybersecurity hack has been made, some people's data has been stolen, or alternatively, some attack has been stopped, whether that's coming from private enterprises attacking other private enterprises, private individuals attacking private individuals, individuals attacking private enterprises, or government attacks on other government and/or private enterprises.

This happens all the time. It is a continuous threat in the internet. And we keep seeing things occurring all the time. These news articles I've posted now have come pretty much over the last couple of weeks. So we've had cryptocurrency accounts hacked into and money stolen from them

I'll talk a little bit more about COVID-19 later about why this is the case, but the pandemic that has come along has increased the number of cyber attacks on the internet. And it's essentially created something I described in that previous webinar of honey pot effect, where it's drawing people in because there is now more information out on the internet that people are willing to try and get, try and steal, and try and exploit.

Then we also have positive cybersecurity stories. And this is essentially what we want to be training people for in the future. We have thwart attacks on our internet and on our digital systems.

And again, it's not a small scenario. It's not a small problem. Almost everyone has a cyber fraud or a cyber attack occur to them on a personal level each year.

So to delve into cybersecurity a little bit deeper, looking at it from a technical perspective, Swinburne is a University of Technology. And we care about cyber security from a technical perspective. And it essentially revolves around the practice of defending computers, servers, mobile devices, basically anything that's on the internet from malicious attacks. And from a technical perspective, it involves applying cyber security principles at a whole lot of different places. We have to look at can we protect our applications? Our software has to be protected against attack.

Information security, where do we store our data? How do we store it securely? How do we stop it from being damaged, stolen, or modified intentionally or unintentionally? We have to look at internet or network security on its own, because the internet and the society we live in today, the

digital society, has data flowing every where. And so it's not just about protecting the data source and protecting the data at its destination, it's also about protecting all data over the internet as it transfers between users.

And then we have operational security because it's not just a matter of making sure we protect everything, it's about understanding what we need to protect and to what level and who is allowed to access and change data and who isn't allowed to do it. And this was becoming important even before the recent outbreaks, but it's something that's becoming more and more important. As we migrate more of our personal lives and our data online, as the internet becomes an integral part of our lives, it's becoming more and more imperative to protect the integrity of our online lives and our online data against theft and/or malicious activities. This is becoming critical.

Just to share a quote I heard from someone from one of the banks here in Australia very recently, they don't care about hiring cyber security people, because they basically hire everyone who comes out of university with cyber security credentials and skills. What they're worried about is everyone else, all the other corporations, because banks always get first pick because they're the big financial institutions. But they're worried about the cyber security of everybody else and protecting the rest of the economy, because there's not enough cyber security experts out there to protect everyone who needs protection.

The flip side of what I'm talking about today is data science. And data science doesn't quite hit the news as much or as big as cyber security often does. It's a little bit more of a hidden thing. But it definitely underpins a lot of the applications we have on the internet today.

So there are a few news articles here. Your data science is important in artificial intelligence, but it's really important is in bringing together all the data we have to develop and present our new applications, the sorts of smart things you see every day, like Google Maps telling you which is your best direction to go home, like Amazon properly suggesting to you the sorts of things you might be interested in buying, or Netflix making good decisions in choosing what you might be interested in watching. Data science is essentially underpinning all those new tools and technologies. Excuse. So again, it underpins-- the concept and the art of data science is trying to use the underlying data sets that we have to make intelligent and smart decisions to have more advanced and more human-like responses from our IT.

So again, to basically try and get that into differences, if you look at the image there, you'll see that everything is growing in size. And underlying is the concept of big data, but essentially we're getting more and more data from more and more sources. And this data is growing in size. But the data is not collected in a nice simple manner. So it's essentially unorganized data. And the skill of the area of data science is involved or looking at how do we look at data sets that are extremely large and poorly defined as in lots of data sets not all in the same format, not exactly correlating one to one with each other? And with all that very large data set, how can we come up with a systematic approach to analyse insights and get an analysis out of that data, so that we can make informed decisions and improve the lives of society as a whole? So again, how do we extract useful information from decision making from massive complex, intermingled, and unsanitised data sets?

And this is becoming important because the data is growing. Everybody is collecting data. Every time you go on Google, data is being collected. Every time you go on Facebook, data is being collected. Every place you go, you have a digital fingerprint of everything you do. So data sets are growing enormous. And the skill sets of tomorrow and the jobs of tomorrow are going to be coming from how do we take that data and do something useful and interesting with them.

How does COVID-19 impact on all this? Well, the simple solution here is-- and I mentioned this towards the end of my previous webinar-- was essentially that COVID-19 has caused society to jump forward 20 years overnight in terms of how we use the internet. The internet's been growing at a regular pace and mostly being driven by entertainment more than anything else.

But now that everyone's had to work from home, we've been forced to move from homes, businesses have been forced to use the internet more and to distribute their data every way, we've moved 20 years overnight in terms of what we do online and how much business has impacted online. And now, what we've got is two-fold. We've got more business data online. And we're creating that honeypot effect of we now have more interesting and more valuable data spread over what is now potentially less secure environment. And that's creating a honey pot for bad actors to try and steal that. So cyber security is growing and becoming even more important is how do we protect it?

And as we do move online, we now have more and more data. And also the crisis has increased the interest of how can we use this data to help protect or provide better responses to these sorts of events in the future? So again, there's a call out there for data science skills to better analyze that data and to better come up with approaches and responses to future scenarios.

In terms of the IT space, in terms of the internet, and in terms of computing, essentially, data science and cyber security are two of the three pivot points of where the future is expected to grow. It's expected to be cyber security. It's expected to be data science. And it's expected to be artificial intelligence. And the nexus behind all three of those merging and collaborating together to be where the next major step evolution in IT and the internet is going to be.

So now, having introduced that, the next question is, why would people want to come to Swinburne in general? And what are our offerings in this area? So why Swinburne University?

As a university, know we are located in Melbourne, Australia. And particularly for international students, Melbourne, Australia, is a highly multicultural environment. We have people from all walks of life and from all parts of the world living in Melbourne, not just at Swinburne University and not just in the education sector. The population of Melbourne comes from a variety of places. I myself, I was born in Australia, but both my parents come from Italy. So I also have a family background that is a multicultural background, and as a lot of our teaching staff and a lot of people in Melbourne in general.

Swinburne University's internationally recognized university. We are internationally recognized not just for our teaching, but also for our research in a whole lot of fields, but also in the area of IT.

Melbourne, along with Sydney, is pretty much the two major IT industry hubs for the Southern Hemisphere. So there are jobs and opportunities in Australia and in Melbourne in particular.

And despite Swinburne is one of the smaller universities in Australia, and while that may seem like a bad thing really, it's a beneficial thing for future students. Because when you are a small university, the student-staff interactions are much more personal. The students actually meet and talk to the academics. They talk to not only the lecturers, the professors, the research experts. They will have personal one on one interactions with these. The sorts of interactions you're far less likely to have at a much larger university where the most expert staff are hidden further away.

Within Swinburne, how do we approach our learning and teaching? The primary driver behind just about everything we do at Swinburne, and certainly within the School of Software and Electrical Engineering, which is where all the IT-based degrees are housed, our primary drivers are always about making sure that our graduates are work ready, that the day they leave and the day they graduate with a degree from Swinburne University, they are ready to be employed and work in industry on day one with all the skill set that they need. And that drives our requirement to make sure our courses are heavily focused on providing hands-on skills.

We teach the theory that's behind everything. But we don't focus on the theory. We don't focus on simulation tools. We focus on real equipment, real tools, and real problems. We also do this by making sure all our learning follows an industry-engaged approach. Industry is heavily involved in designing our courses, in commenting on our courses, and in managing our courses. And we also work very hard to make sure we have a range of industry sourced or focused projects for students to work on during their time at the University.

We make sure we design our courses around the outcomes that we want our students to achieve. So we look at what are the primary angles and what are the likely jobs they'll be working on and doing at the end of their degree. And then we focus and design our courses around what we want our students to be able to do.

And when we do do our actual teaching with our students, our teaching pedagogy is revolved and related around what the students need to acquire. So you will find at Swinburne that while some units of the traditional approach with exams, everywhere where practical skills are involved there is a heavy focus on practical assessments and verifying students skills and abilities to do the tasks that they will need to do in their professional career.

Again, this harks back now to the fact that Swinburne is a small university. Because it's a small university, it means that the teaching staff, the lecturers, and the people running the labs are going to be the experts. They are going to be the academics. They are going to be the PhD students who are working in that area right now. We do not hire sessionals without skills because we have extremely large numbers of students and we need people to look after them. We do want to have a large number of students. But we have the students that we can support and make sure we can teach with our ongoing staff.

Really what it all boils down to is we care about our students. All the academic staff regularly know who their students are. We can talk to them. We speak to them. We know may not know every single one of them by name. But we work hard to try and do that. If we don't know them by name, we certainly know them by face and we know by who they are.

So what are our offerings in this area? That's probably what we're really looking to talk about today. We have two courses in the postgraduate space. First of these are master of cyber security. I am the course coordinator of this program. This is a two-year program at Swinburne University. And it revolves and was designed around a project-based teaching pedagogy. So we designed this around completely project-based learning.

The first semester is essentially a normal non-project based approach, where we cover all the basic skills. And then for the final three semesters of this course, the students will be spending half their time doing project-based work. So half of their workload every semester for the final three semesters is on project-based work. So essentially, this course revolves around 0.75, or 3/4, of the year equivalent of project-based work-- 3/4 of a year over a 2-year course, sorry.

Our projects are industry sourced in this. So we do look to, for, and grab the projects that the students will be working on from industry. And the projects revolve around the hands-on technical skills that they will be specifically using to focus on solving cybersecurity problems. The students would also get to work within and with the experts in the Swinburne CyberSecurity Research Centre, who drive the direct of the current focus of what we are teaching and what skills are required because they are on the cutting edge of what's happening in cyber security. And there is an opportunity for our students to have industry placements within this course within their final semester of their studies.

The data science program, master of data science is also a two-year program. It also revolves around the project-based teaching pedagogy. This also has three project units in it as well over the last three semesters. But the first two project units are a 1/4 of their workload. And the final project is half of their workload. So it's a little bit less project work. But there's a few more technical skills we do need the students to understand, which is some of the reason behind that.

Again, the course is driven around industry sourced projects and making sure that students get real current skills, technical skills on solving data science problems. Industry placements are also available in this. For students, if appropriate technical background and depending upon whether visa requirements allow it, both these programs allow up to half a year of exemptions at the start of the program.

So that brings me to the immediate end of my presentation. And I suppose I'll throw it back to Venus to take over. And ask me or ask myself or Mahdi any of the questions. Thank you, Venus.

Venus Liao

Thank you, Jason, for a wonderful presentation on cyber security and data science from Swinburne. Please, if you have any questions, please put it in the Q&A box at the bottom of the screen here. And we'll go through that questions with you together. As we wait, Jason, I do want to congratulate your promotion to be a deputy department chair. That was my wish for your next promotion.

Jason But

We'll see what happens, but certainly not now.

Mahdi Shariatian

So, Venus, there's a question on entry requirement that just came in for master of cyber security and data science. We have quite flexible entry requirements. Jason, do you want to quickly mention that? Or do you want me to cover on that point?

Jason But

I think you can probably go in a little bit more detail. But essentially, the entrance requirements are STEM based degrees. So in general to move into data science and to move into cybersecurity, you do need to have some sort of a technological or science background. But it is not limited to people with computing backgrounds. So, yeah, anyone who's-- and, you know, usually while we say STEM and someone who's done chemistry is probably unlikely to be interested in these programs, but we certainly can take them if they are, essentially, however, most of the interest tends to come from people who have a background in electrical electronics, computing, IT or technology programs.

Mahdi Shariatian

Excellent. I just want to add that if a student does have experience in the field of IT, extensive experience in their field of IT and is coming from a non-cognitive background, we are happy to look at their applications as well. So as Jason said, we are quite flexible with these entry requirements.

There's another question about the duration of the industrial placement that you mentioned. Jason, was--

Jason But

OK, so the project work is done with on-campus from industry sourced projects. But the industry placement is taken as an elective in both programs. So both programs have two elective units in them. And if students maintain a sufficient grade average, they will be eligible to apply for the industry placements.

So if they are eligible to apply for the industry placement, the university will source and locate a job for them, not myself. We do have someone else in the school who's role and responsibility that is. But we will source and locate an industry internship for the student. And they will be off campus. Or they'll be interest-- but, by the time a new student gets to their final year-- hopefully this COVID-19 thing will be all over. We'll be back to working on offsite-- but people will be able to actually have an internship where they are placed within industry working for the industry at their site, not studying for-- and that's for credit. So that counts towards their degree.

Mahdi Shariatian

Excellent. Thanks, Jason. There's another one that you might have some information update about our accreditation process by Australian Computer Society for these two courses.

Jason But

Both these courses have been pushed to ACS. They cannot be accredited fully accredited until we have our first graduates. So the courses have only been running so far for 12 months. I'm not sure of the exact terminology behind that, because I'm not the accreditation person with ACS. I'm not sure

whether they call it either provisional accreditation or pending accreditation. But essentially, we can't be fully accredited until this time next year basically.

We believe the way we have designed the courses and the way we have pushed the paperwork to ACS, we've had encouraging feedback, that essentially we're just waiting for graduates to be employed in the area. And then we should get ACS accreditation. So the courses were designed to make sure that there would be ACS accreditable. But actual accreditation has to wait till our first graduates.

Mahdi Shariatian

Thanks, Jason, for that. That's spot on, absolutely. So this is the process for all accreditation, for all the universities. Because these two courses are new courses, we need to wait until we have the first batch of graduates to go ahead. But as Jason said, because the way the course is structured-- we are in the process actually to get that process.

Jason But

I am involved in accreditation for the University. And I am involved in making sure our other courses do get their accreditation. So we have got our master of science level systems, our master of IT. I think they're all our master level courses that we face ACS accreditation, and all our undergraduate level courses. So I know what's involved with getting ACS accreditation. And I'm sure that these will get ACS accreditation once we pass the hurdle of getting some graduates.

Mahdi Shariatian

Thanks, Jason, on that. Another question came on the entry requirements. So we already covered it. So basically, you need to have an undergraduate degree in a STEM area. And students who come with extensive experience in the field of IT work experience, in the field of IT also can apply.

There's another question about what if a student is interested in to study data science, what courses we offer. We have a master of data science that Jason spoke about today in the field of post grad. And in undergraduate, if students are interested in--

Jason But

Bachelor of computer science.

Mahdi Shariatian

Exactly.

Jason But

Once you're in the bachelor of computer science, there is a major. It may not actually be called data science major. I don't have the information in front of me. But there's a major that definitely revolves around data science.

Mahdi Shariatian

It is called data science.

Jason But

It is called data science. Thank you, Mahdi. I didn't look up the bachelor of computer science because I wasn't talking about that today.

Mahdi Shariatian

Yeah, no, that's just really good. And just reading, going through the questions, so in terms of the availability of courses for the August intake, all of our courses are available for August intake online. So for students who are offshore at the moment--

Jason But

I would say that all the units or first level units in these courses are running in online mode at the moment. In the master of cyber security, one of those units will be running with on-campus labs. But it has been designed to allow students who are remote to log in remotely and work on the networking equipment from wherever they happen to be. So it is an actual lab running on real equipment, but you will be accessing that equipment from wherever you happen to be. So, yes, both of these courses can be taken remotely at the moment.

I'm just looking at some questions here. Mahdi probably can talk a little bit more about IELTS exemptions. But essentially that's a university policy. So Mahdi knows that a little bit more detail.

Mahdi Shariatian

Exactly. And the answer to that question is a firm no. We don't have any exemptions on bans for IELTS. So students need to meet the entry requirement. Obviously, at the moment, things are changing. They're other English exams that are required to be accepted. So there has been information about that circulated to our agents. So please feel free to reach out to your regional manager for updates around that.

I've noticed the time. So I'll probably pass this on to Venus. And we'll get back to you with the unanswered questions.

Jason But

If I could just quickly, there's a question here on salary ranges.

Mahdi Shariatian

Oh, yeah, yeah.

Jason But

Certainly, initial graduates, a lot of the salaries in this space also depend on real experience post degree. So your starting salary, I would imagine in Australia, would be in the order initially probably \$50,000 to \$80,000 a year. But with two or three years experience that will definitely jump up into the \$100,000 to \$200,000 bracket just about anywhere. So once you've got the experience, we'll do that.

We'd have to look up the ranking of Swinburne University in data science and cyber security. I don't have that at the top of my head.

And if you have colour vision disability, no, it absolutely does not affect your study in computer science, not at all. Maybe a little bit in user interface design, but certainly not in anything else.

Venus Liao

Wonderful. Thank you very much, both Jason and Mahdi. I just wanted to add a little bit of more information for students that are taking online enrolment from offshore for second half of 2020, currently Swinburne is promoting Swinburne and LinkedIn International Program, offering all the students studying from offshore to receive an automatic 30% fee reduction, as well as free access to LinkedIn program. So it is a very attractive promotion at the moment. If you want to know more information about what it is, please contact your regional recruiter manager as well.

And we have a mention that there is also a STEM PG scholarship offering a 30% pay reduction for both onshore and offshore students. If you want to know more, again, contact Mahdi or your regional recruitment managers from the Swinburne University.

We have run out of our time. And I just wanted to say thank you, Jason and Mahdi, Jason for your presentation on Swinburne cyber security and data science. And thank you to all of our participants around the world for tuning in today. Today's presentation will be emailed to you after the webinar. Join us at our next webinar next Friday on 3rd of July at 2:00 PM for Swinburne Fintech. The invitation for this webinar will be sent out to you today as well.

Thank you again. And have a nice weekend, everyone. Take care. Goodbye.

Jason But

Thank you, Venus. Bye.

Venus Liao

Thank you, Jason and Mahdi.

Mahdi Shariatian

Thank you. Bye bye.

Venus Liao

Bye.

[END OF TRANSCRIPT]