



Young Leaders Program

Digital Trust: Blockchain & Cybersecurity

9 to 26 July 2019, Sydney, Australia



The University of Sydney

We are Australia's first university, with a history of leading new thinking and welcoming people from all social and cultural backgrounds for more than 160 years. We offer the widest range of academic programs of any university in Australia, and are a member of the Group of Eight network of leading Australian research universities.

Since our inception, we have believed in education for all and leadership that makes lives better. Our alumni have inspired, led, entertained, challenged and improved the world around them. We have produced seven prime ministers, two Nobel Laureates, three astronauts, 110 Rhodes scholars, one Pulitzer Prize winner and 149 Olympic athletes. Our main campus is also recognised as one of the most beautiful in the world.

Young Leaders Program

The **Young Leaders Program** consists of a customised suite of non-award academic focused short courses. It aims to help the next generation of international leaders achieve their potential. It is managed by the International Leaders Program team at the University's Office of Global Engagement.

The course

The Young Leaders Program - **Digital Trust: Blockchain and Cybersecurity** is a bespoke non-award academic-focused course. The course has a specific focus on developing students' understanding of the latest developments, trends and innovations – as well as the challenges – in the world of data science and computer engineering.

It draws on the knowledge of experts from the University of Sydney to provide students with a wide ranging perspective. Discover how we're making technology smarter. How can data-driven knowledge improve our lives?

The course comprises of lectures, seminars, tutorials, group work and educational field trips. Classes are interactive and draw upon case studies and scenario based learning with an emphasis on real-world application. In addition, students will have an immersive experience of Australian culture and society through various social and cultural activities; providing a holistic opportunity to develop their intercultural awareness, communication and teamwork skills.

Key Modules

Module 1 – Blockchain from a distributed computing perspective, taught by Dr Vincent Gramoli

This unit will cover areas including consensus fundamentals, reducing communications, blockchain fundamentals, delay tolerance, balance attack and optimization while student will develop knowledge around some blockchain examples.

Module 2 – Mobile security, taught by Dr Suranga Seneviratne

Mobile security is an important aspect of modern cybersecurity. This is a crash course on reverse engineering mobile apps which is useful when it comes to analysing malware. The course will be focusing on Android. There will be an overview on Android app development and we will then move straight to static and dynamic analysis of Android apps. At the end, there will be a live Mobile Capture the Flag event where the students will be taking up 10 reverse engineering tasks.

Module 3 – Machine learning for cybersecurity, taught by Dr Suranga Seneviratne

Machine learning (ML) is currently evolving rapidly and becoming a useful tool in cybersecurity. In this part we will look into how machine learning can be applied in various security settings such as spam detection, intrusion detection, and network traffic analysis.

Testimonial

“The course is very inspiring! Great teachers, passionate, humorous and very friendly! I have experienced so many new things and made some friends.” — Student from Wuhan University, China

“I thought teaching this course was a great experience and I'd definitely do it again. Students were generally very good - spirited, engaged, quite communicative. I thoroughly enjoyed teaching them.”
— Teacher from the University of Sydney

Academic Profile

Dr Vincent Gramoli is an Associate Professor and the head of the Concurrent Systems Research Group, a senior researcher at Data61-CSIRO and a Future Fellow of the Australian Research Council. Prior to this, he was affiliated with INRIA, Cornell University and EPFL. Dr Gramoli received his PhD from Université de Rennes and his Habilitation from UPMC Sorbonne University. He is the Chair of the Blockchain Technical Committee at the Australian Computer Society.

Dr Gramoli's current research areas are:

- Distributed and networked systems blockchain
- Cloud computing
- Concurrent programming synchronization
- Concurrency

Dr Suranga Seneviratne is a Lecturer in Security at the School of Computer Science. His current research interests include privacy and security in mobile systems, AI applications in security, and behaviour biometrics. Before moving into research, he worked nearly six years in the telecommunications industry in core network planning and operations. Cybersecurity is the important area in Dr Seneviratne's research.

“My research looks at how to secure networked systems and end-user devices from cyberattack. The main challenge in doing this is the trade-off between the usability and the level of security – it's not practical to develop highly secure systems if they force additional usability overheads onto the user.

Cybersecurity has always been an arms race between the attackers and the researchers. As security researchers, we need to identify vulnerabilities and potential threats before they are exploited, and come up with countermeasures when attackers change their strategies. I enjoy this continuous challenge of working in network security, and its very dynamic nature.”



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Preliminary Schedule

This is the preliminary program schedule and the final version will be available two weeks prior to programme commencement.

Tue 9 Jul	Wed 10 Jul	Thu 11 Jul	Fri 12 Jul
Arrive in Sydney Check into student accommodation	<u>Welcome Orientation</u> <ul style="list-style-type: none"> Welcome to Sydney Program introduction Housekeeping 	<u>Module 1</u> Blockchain from a distributed computing perspective	<u>Module 1</u> Blockchain from a distributed computing perspective
	Welcome lunch	Lunch break	Lunch break
	<u>Campus Tour</u> Campus and facilities tour with USYD Student Ambassadors	<u>Module 1</u> Blockchain from a distributed computing perspective	<u>Module 1</u> Blockchain from a distributed computing perspective
Sat & Sun 13 & 14 Jul Free time to explore Sydney			

Mon 15 Jul	Tue 16 Jul	Wed 17 Jul	Thu 18 Jul	Fri 19 Jul
<u>Module 1</u> Blockchain from a distributed computing perspective	<u>Module 1</u> Blockchain from a distributed computing perspective	<u>Module 1</u> Blockchain from a distributed computing perspective	<u>Module 2</u> Mobile security	<u>Module 2</u> Mobile security
Lunch break	Lunch break	Lunch break	Lunch break	Lunch break
<u>Cultural activity</u> Walking tour: Australian History	<u>Module 1</u> Blockchain from a distributed computing perspective	<u>Educational Trip</u> School and/or research centre visit	<u>Module 2</u> Mobile security	<u>Module 2</u> Mobile security – live Mobile Capture the Flag event
Sat & Sun 20 & 21 Jul Free time to explore Sydney				



Mon 22 Jul	Tue 23 Jul	Wed 24 Jul	Thu 25 Jul	Fri 26 Jul
<u>Module 3</u> Machine learning for cybersecurity	<u>Module 3</u> Machine learning for cybersecurity	<u>Module 3</u> Machine learning for cybersecurity	<u>Closing</u> <ul style="list-style-type: none">• Assessment• Evaluation• Certificate presentation• Group photo	Depart for Sydney International Airport for return flight
Lunch break	Lunch break	Lunch break	Lunch break	
<u>Module 3</u> Machine learning for cybersecurity	<u>Guest Lecture</u>	Free time	Free time & pack for return journey	

Program date

9 to 26 July 2019

- 9 July: arrive in Sydney
- 10 July: course starts
- 25 July: course ends
- 26 July: departure

Participants

The program is suitable for students currently studying computer science and technology.

The course will be taught and assessed in English. Although we will not request evidence of a formal English language assessment, an adequate level of English language ability (IELTS 6.5, TOEFL IBT 79 or above) is recommended in order to achieve the best outcomes from the program.

Participants will have the opportunity to meet students from other leading universities, and also meet local University of Sydney students.

Important Note

All students will need to bring their own laptop.

A mobile phone with Android system is desirable as it will be used for a live Mobile Capture the Flag event during the course. If you don't have one, some of the tasks may be done in phone emulators on your laptop.

Fee

The program fee of **AUD \$4,470** per student covers:

- Tuition fee
- Field trips and admission
- Welcome and Closing ceremony
- Twin share en-suite self-catering student accommodation (including wifi), from 9 to 26 July 2019 (total 17 nights) within walking distance of the University
- Access to university library and wireless internet
- Access to health services, sports and fitness centre (costs applies)
- Opal Card for public transport in Sydney
- Certificate of Program Completion, and Assessment Report upon successful completion

The full payment is payable to the University of Sydney and is due on or before **24 May 2019**.

Application

Application should be made to your home university directly. Please contact your university's officer-in-charge for details.

The application closes on **15 April 2019**.

For more information

International Leaders Program | Office of Global Engagement
W sydney.edu.au

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