Title: Teaching Wired and Wireless Network Security During Covid-19

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Abstract:

With exponential growth of the Internet, security of a network has become increasingly challenging. This subject explores the security vulnerabilities in both fixed and wireless networks and cover the fundamental concepts and advanced issues with an emphasis on the Internet architecture and protocols.


Teaching Strategy: The main objective of this course is to encourage students to be creative and being able to think outside the box. Students should be able to relate new ideas to previous knowledge or real world experience. The student experience consists of lectures (3-4 hrs per week) for the first 7-8 weeks. A set of review/quiz questions is provided to help reinforce the main ideas introduced during the lecture (There are no formal tutorials in this course). At least some part of assessment should be based on real world experiences. This subject uses of hands on laboratory sessions aimed at supporting problem based learning to enhance student-learning experience. The student experience is be supported by on-line access to materials. Finally, students are required to complete a project by either writing programs, analyzing security vulnerabilities propose solution or a research report.

Challenges During Covid-19:
The teaching in first term 2020 was interrupted by Covid-19 where all classes had to move to online teaching mode. Since I had taught this course in 2019, there were audio/visual recording of my live lecture with PowerPoint on screen available on the university server. I chose to edit these files using Camtasia software to make it suitable for the current term. The interaction and class ambiance were captured in these recordings which would have been hard to replicate in pre-recorded lectures. We had planned to release an implementation-oriented project using Raspberry PI with Bluetooth radio interface. Students were expected to work in a group of 2 to 3. However, this became impossible due to online teaching and social distancing restrictions. Hence, we released a research report only option. In past around 20% of the class had opted for research report. Designing a group research report specification has been very challenge but we had a stable version from past which we could reuse rapidly. We would be happy to share these specifications with the community.
Online resources:
I also developed a module and Webinar for the Cybok Project on Network Security, a 1-hour crash course on network security. Both foils and webinar are publicly available under infrastructure security link below

https://www.cybok.org/knowledgebase/
https://www.cybok.org/events/network-security-knowledge-area-webinar

With introduction of Covid-Safe app, I saw a lot of confusion around security and privacy concerns in my social circle as well as my own school. Having taught the Bluetooth security module as my last lecture in, I decided to prepare a supplement last minute on Covid Tracing apps. This gives a basic understanding of how the Australian version of app works using Bluetooth proximity. https://www.youtube.com/watch?v=jyzh_kQEMo8&t=88s
Following is more of a high-level interview for media for the above

A detailed survey comparing various covid-tracing apps can be found below. The analysis and future can be used to develop project specifications for networking as well as security and privacy challenges.