Enrolling in the Computer Science Challenges Module must be the greatest decision I have made for my education. This module has given me the opportunity to involve myself in the cutting edge of cyber security, and I was able to build the world’s first network attack detector which uses machine learning. People considering taking this module should be aware that the emphasis is on “Challenge”. I was fortunate enough to complete my project resulting in a prototype but that is not the goal. I will never forget the feeling of encountering a problem, researching and learning a new skill and then using that skill to fix the problem. This is the goal, developing confidence and independent learning. That is something that you will not find in a normal module. Dr Bustard was extremely helpful by encouraging us to take a systematic approach to each issue we encountered.

“Enrolling in the Computer Science Challenges module must be the greatest decision I have made for my education.” You can change this quote.

Doing something that uniquely interested me was a key reason why I enjoyed this module so much. With a wide range of projects on offer, each in different fields, it is guaranteed that you will find one you are passionate about.

Raspberry Pi Network Monitor

Creating a Raspberry Pi Network Monitor was the project I worked on during the Computer Science Challenges Module. The idea was that the Raspberry Pi would connect to the network (wired or wireless) and begin monitoring the packet exchanges on the network. This would allow network engineers to have a portable debugging device which they could use to easily resolve issues on the network. Once this was built, I decided to incorporate machine learning into the project so that the network monitor could detect attackers on the network by itself. It would then be able to passively get better as it analysed more and more network communications.

Invent NI

Another unique opportunity afforded by this module was submitting my project to Invent NI’s annual university competition.

Skills Learnt: C programming, Flask Webservers, Dual Booting, Linux Commands, Packet Analysis, Machine Learning, Python, Problem Solving, Research Skills.