Report on Research Conducted with Assistance of the Royal Holloway Travel Award and the Santander Travel Award

It was an honour and I am immensely grateful to be awarded the Royal Holloway Travel Award and the Santander Travel Award to help defray my costs of travel to DEFCON 25 in Las Vegas. The purpose of my trip there was to research on the current threat landscape and vulnerabilities affecting Internet of Things (IoT) devices. In addition, it was also to explore and recap the year in information security since the last iteration of the conference (DEFCON 24).

DEFCON is a unique security conference with multiple tracks and themes running concurrently, such as tracks for beginners, hardware hacking, car hacking, cryptography and privacy, industrial control systems, lock picking, packet hacking, voting machines and IoT. On top of all the talks and workshops, information security related hardware and books could also be purchased, often coming with signed copies of the books as the authors are attending the conference too.

I spent most of my time in the IoT Village to learn about the current threat landscape of IoT devices and attended various presentations about how researchers found vulnerabilities within IoT devices and thought leadership talks on how vendors and researchers should work together to secure IoT devices. There were also innovative presentations about detecting attacks within IoT networks and it was extremely intriguing to apply the theory of classical cyber defences and adapt it to work in a relatively new domain of IoT technology. Following that, I also attended an evening workshop on basic IoT hardware hacking where I learnt various components of common hardware used to build IoT devices, identifying common interfaces that are normally being used, mapping the attack surface of IoT devices, reading IoT firmware and extracting it out for analysis. The workshop was extremely useful and instrumental for my research work on vulnerability research on IoT devices as it helped me to cement what I had learnt so far and gave me an opportunity to assess what I knew and what I did not.

After obtaining a rough idea of what I had understood, I also took advantage of DEFCON offers and bought several books and hardware that would complement my IoT research. I also got some of the books signed by their respective authors who happened to be around.

In conclusion, it was a very enriching experience for me and I was very glad to be able to attend DEFCON 25. The knowledge and experience I had gained while attending DEFCON was invaluable and assisted me greatly for my current research work. The Royal Holloway Travel Award and the Santander Travel Award had helped to offset some of the travel and accommodation expenses. With those savings, I could thus afford some of the books and extra hardware to be used for my IoT research. I would like to once again thank Royal Holloway and Santander for the creation of the Travel Award to support students in their research work!
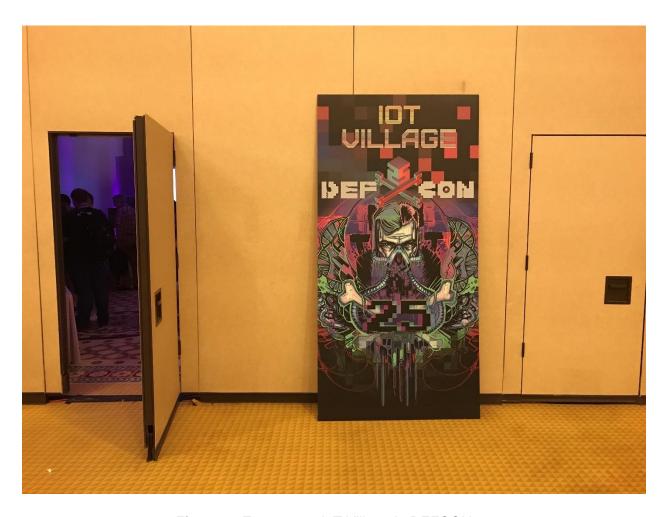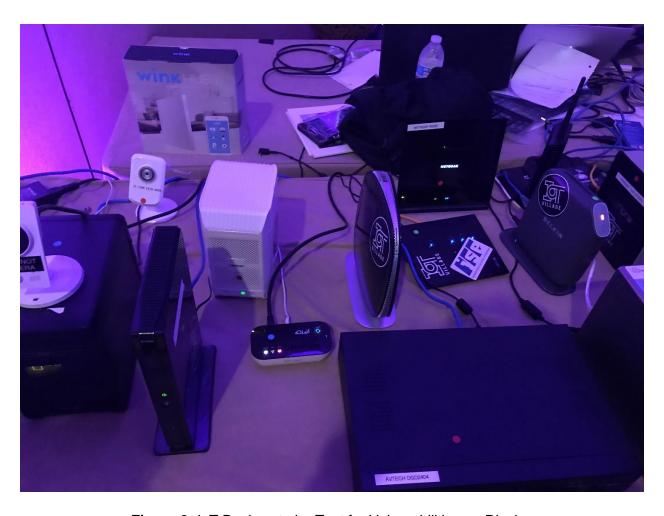

Figure 1: Entrance to IoT Village in DEFCON 25

Figure 2: IoT Devices to be Test for Vulnerabilities on Display