School of Engineering/URSS Summer Research Internship Scheme

Case Study

2017 will be the first year the School of Engineering has provided internships. However many of our students have taken part in URSS before. Here is a case study of a Biomedical Engineering student, Hok Chiu, who undertook an internship in 2016 with Professor Christopher James.

I have previously worked on a smaller project with Professor James for biomedical engineering outreach. The project involved using a headset with one electrode to detect the eye blinking; using live data the blinks would be detected and then read as inputs, which would control a SERVO motor to switch a light on and off.

My 2016 URSS internship project was to work on the development of a muscle activated switch for the severely debilitated, so this could be used for such patients to communicate basic (to more complex) signals. The long term outcomes were to develop a solution that would allow a severely debilitated patient to communicate by detecting EMG activity from his/her muscles. My project looked at the sensitivity of a muscle switch, and subsequently whether visual guides could be shown to patients in order to create different magnitude signals; this would create more signals types to develop from communicating with binary signals with the previous switch. I also looked at the whether the speed of the signal could be accurately identified, and also used to indicate different signals.

A typical day during the internship was usually both challenging and satisfying. I normally faced wide-ranging challenges, which could be software or hardware-related, or struggling to find obvious/ elusive patterns in my data, or problem solve in a way that I normally wouldn't. Whenever I reached certain milestones, it was always very satisfying!

I have benefitted in several ways from this internship. Firstly, I have enjoyed problem solving independently; secondly, there are people in the office who do know much more than me, whom I have learnt to ask when I do reach dead ends! Lastly, I have learned a lot of skills for problem solving in practice, where it was better to have learned it by myself than being taught in a module, including using MATLAB, general coding principles and data-processing.

If you are thinking of applying, I would suggest you look for a project that genuinely interests you, find out more about it, and then apply. You may not need to have all the skills for the project at the start; it is as much about you learning, as much as making breakthroughs in your research. It is a very worthwhile way to spend your time over the summer!

Hok Chiu
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