EIE Summer Research Projects 2016/2017

**EIE2016/1 A persuasive virtual reef**  
**Supervisor:** Dr David Milne [david.milne@sydney.edu.au](mailto:david.milne@sydney.edu.au) - School of Electrical and Information Engineering

This project will investigate how increasing the immersion and presence felt in a VR experience can increase its persuasiveness. It will build on top of prior work, in which a virtual reef was constructed that could be subjected to the effects of ocean acidification, and a breathing sensor was developed that could give participants the impression they were breathing underwater, as a scuba diver.

The project will involve applying signal processing and game development skills to improve the visual and audio feedback given by the breathing sensor. It will also involve conducting an ethics approved experiment to measure whether participants gain an increased sense of presence, improved attitudes to conservation of the reef, and increased willingness to donate to an ocean conservancy when they experience the virtual reef with and without the breathing apparatus.

**Duration**  
8 weeks

**Selection criteria**

- Experience with game development and the Unity game engine
- Familiarity with signal processing algorithms
- Prior experience conducting experiments with human participants
- Basic familiarity with statistics (e.g. significance testing)
- Good communication skills
- Independence and creativity

---

**EIE2016/2 Predicting Attrition in Online Peer-Support**  
**Supervisor:** Dr David Milne [david.milne@sydney.edu.au](mailto:david.milne@sydney.edu.au) - School of Electrical and Information Engineering

This project involves mining the content and usage logs of Hello Sunday Morning (HSM), an online peer-support platform for people who want to reduce their alcohol intake. Specifically, you will construct a machine-learned classifier that will be capable of predicting whether a new user of the site will remain active, based on features such as how they respond to initial surveys (e.g. about their personality, alcohol use, goals, etc.), their behaviour with the site (e.g. login frequency, use of social features, etc.), what they talk about when posting to the site, and the connections they are able to form with other members of the site (e.g. by giving and receiving likes and comments).

Such a classifier would be extremely useful to the team at HSM, who could use it to identify people who are most at risk of dropping out of the programme, and to tailor interventions to reduce attrition.

**Duration**  
8 weeks

**Selection criteria**

- Experience with machine learning and text mining
- Fluency in Python and SQL
- Familiarity with the scikit-learn library
- Good communication skills
- Independence and creativity