Better World Showcase 2018

Demonstrating how the Faculty of Science & Engineering is Making a Difference

ChArMeD - Cheap Arduino Metal Detector Initiative

Researchers in the School of Electrical and Electronic Engineering are developing cutting-edge detection technology to locate buried, unexploded landmines for humanitarian purposes. ChArMeD expands on this major research theme, seeking to showcase HE research to a wider audience, whilst exposing the next generation of potential scientists, engineers and technologists to the concept of bringing about societal improvement through the application of engineering.

The aim of the activity is to provide a hands-on session which enables students to build a fully functional metal detector using components totalling less than £25, only £5 of which are consumable costs. The system is built around an Arduino Uno – a simple, off-the-shelf programmable microcontroller system – and some basic electrical components. This enables students to experience coding, simple electro-mechanical assembly and problem solving, whilst also building a system which is practically useful.

Many elements of the activity are modular, meaning parts can be simplified or bypassed according to age and ability. By adopting this approach the activity has been successfully delivered to a diverse range of participants, from 10-year-olds to FE-level STEM teachers.

How Liam and Michael have Made a Difference

The workshop has:
(1) Raised awareness of the University’s research into new landmine detection technologies.
(2) Created opportunities for young people to ‘do’ engineering, introducing new skills, and building confidence towards experimenting with their own circuits and programs.

The workshop has been run by the nominees at many different outreach events, festivals and with school groups over the last 18 months, engaging over 250 adults and young people. Examples include Discover Engineering Days, Scouts’ Science Camp, and STEM Teachers’ Conference, among others. It was run by the nominees and other colleagues in an alternative form at the 2017 Cheltenham Science Festival, attracting around 3500 visitors over 6 days.

https://tinyurl.com/EEEcharmed

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www.manchester.ac.uk/betterworldshowcase