



Wednesday 13 March 2024
Dixons Croxteth

Programme of Activities

10.00 – 10.15	Arrival in our Lab & Welcome (including security induction & account registration)
10.15 – 11.00	Workshop 1: Logic circuits (Ben K)
11.00 – 11.30	Giant Sorting Network (outdoor activity)
11.30 – 12.00	Lunch Break
12.00 – 12.45	Workshop 2: Introduction to AI (Jade)
12.45 – 13.45	Hands-on Workshop: Lego EV3 drives the warehouse
13.45 – 14.00	Closing Talk

All workshops take place in Lab 3 of the George Holt building.

Information about the Activities

Introduction to AI

To give a good overview of artificial intelligence, I will be discussing 3 main topics:

- What data is used to train AI models, and what characteristics it should have.
- In what way is the data used to train AI models (discussing finding patterns, similarities and trends) - a very basic overview.
- What safety and ethical considerations should there be when we are developing and using AI tools: Bias, Reliability, Transparency and Privacy

Logic circuits

$$1 + 1 = 2$$

But how? You might know binary addition on paper, maybe even a bit of logic gates or Boolean algebra, and you've heard that computers 'are made of switches' and 'treat numbers as zeros and ones' or 'off and on', yet there's a missing piece to the puzzle to tie this all together.

This lesson aims to answer the 'why are we learning this?' of Computer Science through a practical activity constructing a relay based full adder circuit. Students will be provided with diagrams that closely relate the physical components in front of them to the mathematical and logical operations they will learn through the curriculum.

Giant Sorting Network

In this outdoor lesson, pupils will play the role of the “compute nodes” in a parallel sorting algorithm. They will experience first-hand how parallelism speeds up computation, but also makes it more challenging to reason about programs.

Lego EV3 Drives the Warehouse

Robots managing large warehouses are one of the many examples where automation helps humans to solve a task faster and cheaper. For this to be effective, robots need to be at least partially autonomous, i.e., able to sense and react to the physical world without (constant) human intervention. In this hands-on lesson, pupils program Lego EV3 robots to follow a line, avoid obstacles, and ultimately navigate a warehouse safely and autonomously.