Liverpool College
Wednesday 16 February 2022

Programme of Activities

09.40 – 10.00	Arrival in our Lab & Welcome (including security induction & account registration)
10.00 – 10.55	**Workshop 1: Sorting – Compared to What?**
10.55 – 11.00	Break
11.00 – 11.55	**Workshop 2: Mobile App Development**
11.55 – 12.45	Lunch Break
12.45 – 13.40	**Workshop 3: Machine learning, Hands on!**
13.40 – 13.45	Break
13.45 – 14.50	**Workshop 4: Lego EV3 Drives the Warehouse**
14.50 – **15.00**	Closing Talk

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

Information about the Activities

Sorting – Compared to What?

When a computer scientist has several algorithms for the same task at her disposal, how shall she decide which one to use? In this activity, pupils will explore by role play how the resource usage of various sorting algorithms differs, how one can get mathematically proven impossibility results about algorithms, and how analysis of algorithms helps computer scientists make informed decisions about what algorithms to choose.

Mobile App Development

Apps on smartphones have broadened the audience of computer programs like hardly any technology, making computers more intuitive and easy to use than ever. In this activity, pupils will create a real app, working on their own devices (or our provided tablets), to help colorblind people. They will experience first hand how user interfaces are created from components, and that an easy-to-use interface is often the result of hard work.

Machine learning, Hands on!

Machine-learning techniques are driving much of the latest successes in computer vision. What only 10 years ago required expert knowledge and know-how to create is now available as existing building blocks – as a literal block in Scratch! The lesson will introduce key concepts about machine learning and feature a creative task in Scratch featuring image recognition.

Lego EV3 Drives the Warehouse

Robots managing large warehouses are one of the many example 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.