MANCHESTER 1824

Animation13

animation13.cs.manchester.ac.uk

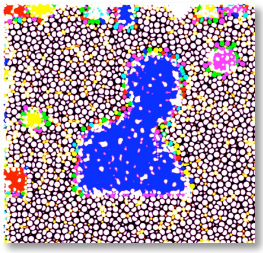
Welcome to the Animation13 Inspirational Computer Science Day – 12 July 2013

Afternoon activities – computer science for everyone!

➔ Talk: "Making Computers Think" (Cosmo Theatre)

Will computers ever be able to think? Will they ever be able to "understand" the world in the way that we do, by seeing, hearing, contemplating…? In this45-minute inspirational talk The University of Manchester's **Dr Gavin Brown** explains some of the fascinating problems, and some of the amazing progress being made, in building computers which can think for themselves.

Hands-on activities – John Thaw Theatre & Room G16



➔ Visualising music(Room G16)

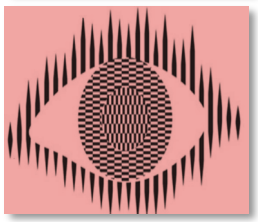
We hear music, but can we somehow see it too? We can if we visualise it – by analysing the structure of the music: its tempo, harmonic content, identifying beats – and then using computer graphics to draw images based on this information. Computer Science student **Joni Sykes** will demonstrate the system he built for his undergraduate project.

➔ Face to face(Room G16)

The Kinect is a popular controller that enables computer games software to "see" the world, and react to the images it receives. This miracle of engineering and ingenuity costs about £100, and has revolutionised not only gaming, but research into computer vision. In this demonstration you'll see how we can use the Kinect to "see" facial expressions, and control the faces of CG characters in real-time.

➔ 3D capture from images(Room G16)

One of the Holy Grails of computer vision research is to be able to take some photos of an object, and then have a computer create an accurate 3D model of the object from those photos. It's a difficult problem, and involves a lot of geometry, a lot of maths, and an awful lot of computing power. Come and be scanned with Autodesk's "123D Catch" software.



➔ cs4fnmagic and illusions(John Thaw Theatre)

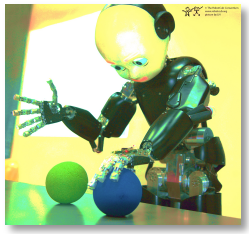
Computer Science For Fun (www.cs4fn.org) is the UK's biggest free initiative enthusing students and the public about computer science. Through magic tricks, and optical illusions, **Dr Paolo Masci** from Queen Mary University of London will explain some of the principles that make computers work.

➔ Augmented reality(John Thaw Theatre)

More and more applications are now combining CGI and video in real-time, to make the world around us appear to include computer-generated objects. We're "augmenting" – adding to – the world around us. Computer science student **Hamza Mahmud** will demonstrate experimental work from The University of Manchester School of Computer Science.

➔ **Meet the iCub robot**(John Thaw Theatre)

The iCub humanoid robot is the state of the art in robotics, with 53 motors to move the head, arms, hands, waist, and legs. It can see and hear, can feel its own movement as well as forces applied to it, and it has touch-sensitive skin. iCubcan learn from its own experiences and change its behaviour accordingly. Come and meet iCub!



➔ **Flight simulator**(John Thaw Theatre)

The University of Manchester's Merlin 520 Flight Simulator accurately simulates flying planes ranging from a single-engine propeller plane to multi-engine turbo pros and jet airlines. Will you be one of the lucky fliers?

➔ **3D computer modelling**(Room G16)

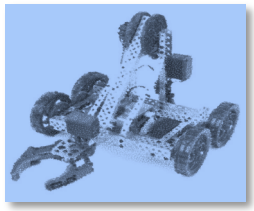
How can we use a computer to change the shape of 3D objects? It's hard, because we almost always have to work in 2D – with a mouse and keyboard and a flat screen. Now we can do it easily and intuitively in real-time using special software on an iPad.

➔ **Raspberry Ripple**(Room G16)

A fully-functioning computer the size of a credit card, for £30 – that's the Raspberry Pi, an amazing new computer released last year and intended for teaching computer science in schools. Computer science student **Tom Macpherson-Pope** will show you what's possible with this amazing tiny computer.

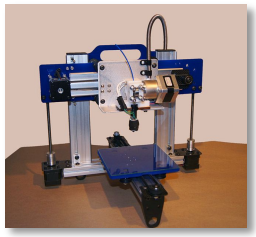
➔ **Meet the Vex robots**(Room G16)

Vex is a robotics kit system designed for introducing robotics to the classroom. Snap together robots from a kit of parts and build amazing machines! Find out more at www.vexrobotics.com.



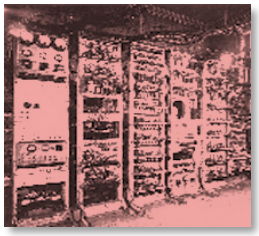
➔ **Printing 3D objects** (Room G16)

Did you know that you can print 3D objects? Using a machine called a "3D printer" and special software it's possible to create 3D shapes out of plastic. The trick is to build up the object from many thin layers. Come and meet **Steve Taylor** from Manchester Communication Academy, who will demonstrate this amazing technology.



➔ **Meet The Baby**(Foyer)

On June 21st 1948, the world's first ever stored-program digital computer, "The Baby", designed and built at The University of Manchester, ran its first program.The world was never the same again. Join **Dr John Latham**– The University of Manchester's "Teacher of the Year" – and find out more.



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