UCL

NEWS FROM THE DEPARTMENT OF COMPUTER SCIENCE

Dear All,

Very many thanks to everyone who attended our Second Annual Alumni Dinner. We would like to thank alumni and friends of the department who joined us; we hope you all had a pleasant and enjoyable evening. It was great to see some familiar faces and to meet new people. Our thanks also to our speaker Dr Sue Black.

Sue talked passionately about her role in the national campaign to **Save Bletchley Park**.

We will keep you up-to-date with future alumni events, but in the meantime do take a look at the latest news from UCL-CS.

UCL-CS Students present projects to Microsoft Research

Earlier this year undergraduate students got the unique opportunity to present their work-in-progress projects to the Directors of Microsoft Research. With real-world clients and support from Microsoft, projects included developing technologies with Windows 8 Embedded (just received from Microsoft HQ in Redmond), Gadgeteer, Azure and Kinect with Robotics. Project scenarios included training for surgery, hospitals and care homes, networked vehicles, new interactions in gaming and education and remote home automation. A demo of semi-transparent display technology was also shown by our students!

Photographed are undergraduate students with Rick Rashid, Chief Research Officer for MSR (global), Jeannette Wing, Vice Chair and Head of MSR (global) and Andrew Blake, Director of MSR UK in Cambridge. The department also hosted a Distinguished Lecture delivered by Rick Rashid, entitled The Evolution of Computing. Rick presented his vision of the future of computing research in light of recent breakthroughs and the opportunities that lie ahead. A recording of this and other previous Distinguished Lectures can be found **here**.

Non stop hacking

Organised by **UCL FINDS** (Financial Industry Series) and sponsored by J.P. Morgan, Bank of America Merrill Lynch and Level 39 at Canary Wharf, UCL-CS students joined the brightest Computer Science students in the country to participate in a weekend hackathon at Canary Wharf.

UCL-CS students pitted their skills against each other students from universities such as Birmingham, Cambridge, Imperial College, and King's College in a round-the-clock hackathon to design and develop an application over 24 hours on the theme of 'Global Citizenship'. With the help of an unlimited supply of sugar and caffeine students brainstormed their thoughts to come up with an innovative but workable idea on Saturday morning, then worked in teams to rapidly develop their projects over the next 24 hours, and on Sunday morning 12 teams presented their value proposition, technology solution and ran a live demo in front of judges.

The winning proposal was an accessible platform designed to give local communities and individuals across the globe a voice to make appeals for funding projects to increase the quality of life within their area. UCL-CS students were delighted to showcase their skills and talent to engineers and HR representatives from world-leading financial firms and enjoyed the chance to network with fellow students from around UK and engineers from major global firms, and show off their creativity and innovation. We hope more hackathons will follow.

UCL crowned first ever UK University Cipher Champion

Cyber Security Challenge UK

A team led by Dr Nicolas Courtois, Senior Lecturer at UCL-CS, has beaten tough competition from some of the UK's leading universities to be crowned the winner of a unique code-breaking competition as part of this year's Cyber Security Challenge UK.

The **University Cipher Challenge** is the first competition of its kind and was launched by the Cyber Security Challenge UK to identify and inspire students interested in entering cyber security careers to practice their skills. Four Computer Science departments from UCL, The University of Birmingham, Edinburgh Napier University and The University of Bristol accepted the challenge to develop their own cipher – a puzzle based on encrypted messages – that was released to other participating universities and candidates to break.

Dr Nicolas Courtois says:

"*Computer Science at UCL is delighted to have been announced as the winner of the University Cipher Challenge. We take an experimental approach to our teaching to ensure that our students have both the practical skills and the necessary expertise to solve any problem they face in the real-world. The Challenge enabled all students involved to learn a lot from their peers in a stimulating and competitive environment – both of which are integral to encouraging more people to get involved in the exciting world of cyber security. We were particularly delighted with the level of female participation from UCL's department in the competition and we will be awarding a special, individual prize to our top cipher scorer, who happens to be female. We look forward to defending our crown in future competitions from the Cyber Security Challenge!*"

Developing prize winning apps

CS is proud to be the first UK university department to incorporate Apps development into our core curriculum courses. This term we hosted our second Apps Prizegiving, for MSc Computer Science and MSc Financial Computing students. Morgan Stanley partnered with UCL Advances to provide a £1000 prize fund for students who produced the best applications to teach novice learners how to program.

Many of the final products were suitable for market, and will be released soon. Winners were awarded their cash prizes by Jake Dennison, Executive Director at Morgan Stanley. The teaching team would like to thank all students for their hard work, the Apps teaching assistants for their dedication, and Morgan Stanley and UCL Advances for recognising the students' potential. Many congratulations to our winners Ben Lee-Rogers, Sarah Sewell, Zhengwhu Cai, Yannick Sealy, Mikko Poutanen, Amit Ratanje, Joon Park, Dolan Miu, pictured with Jake from Morgan Stanley.
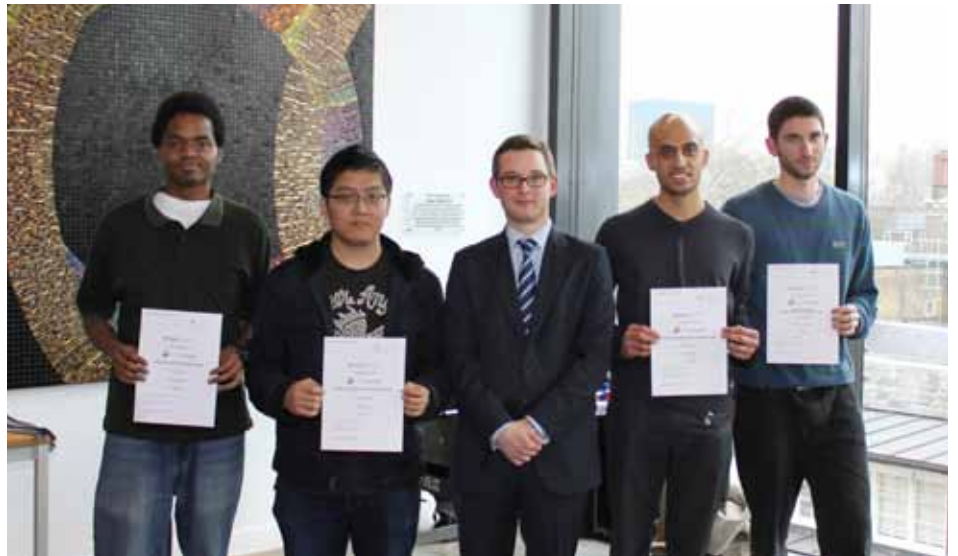
Chirp app nominated for design award

The **Chirp app**, which enables easy sharing of information between smart-phones via sound, has been nominated for a '**Design of the Year**' award by the Design Museum in London. Chirp has been nominated in the 'Digital' section. Other nominees include the Rasberry Pi computer, the UK Government's website and Microsoft's Windows Phone 8 operating system.

Chirp is a free app developed by **Animal Systems**, a spin-off business led by Anthony Steed, Professor of Virtual Environments and Computer Graphics at UCL–CS. It uses sound from a smart-phone's speaker to trigger transfers of photos, web pages and contacts.

The phones receiving the sound then transfer the data via the company's servers. Existing systems share data via WiFi or Bluetooth but these require some time and effort to set up 'pairing' arrangements between devices. Chirp avoids this and also enables data to be shared with multiple recipients. The sound used has been carefully chosen to enable the app to work in noisy environments such as pubs and busy streets.

# First micro-structure atlas of the human brain completed

A European team of scientists, including Danny Alexander, Professor of Imaging Science at UCL-CS, have built the first atlas of white-matter microstructure in the human brain. The project's final results have the potential to change the face of neuroscience and medicine over the coming decade.

The work relied on groundbreaking MRI technology and the participants of the project, called CONNECT, were drawn from leading research centers in countries across Europe including the UK, Israel, Germany, France, Denmark, Switzerland and Italy. The new atlas combines three-dimensional images from the MRI scans of 100 brains of volunteers. To achieve this, CONNECT developed advanced MRI methods providing unprecedented detail and accuracy.

Professor Daniel Alexander says:

"*The UCL team used the latest computer modelling algorithms and hardware to invent new imaging techniques. The techniques we devised were key to realising the new CONNECT brain atlas. The imaging techniques reveal new information about brain structure that help us understand how low-level cellular architecture relate to high-level thought processes.*"

Currently, biomedical research teams around the world studying brain science rely on a brain atlas produced by painstaking and destructive histological methods on the brains of a few individuals who donated their bodies to science. The new atlas simulates the impossible process of painstakingly examining every mm2 of brain tissue (of which there are around 100 million per brain) with a microscope, while leaving the brain intact. This opens new realms in our understanding of our most complex organ. In the future, the project members intend to use the technology they have developed to study the dynamics and time dependence of the micro-structure in white matter. For example they will search for a finger print or a trace that a cognitive task imprints on white matter microstructure encoding new experiences in the wiring of the brain.

Serendipity is more than a 'happy accident'
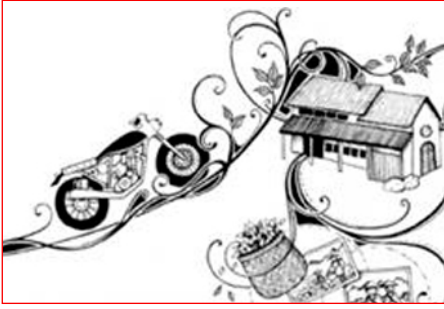
By collecting and analysing people's 'serendipity stories', researchers at UCLIC (UCL Interaction Centre) and their partners hope to design an interactive system that makes us more prepared for recognising serendipity when it happens and, crucially, supports us in acting on it. In order to understand serendipity better, the team asked 39 academics and creative professionals to tell them their memorable examples of serendipity, either from their work or everyday lives.

The 'serendipity stories' told by their interviewees include a student being offered an internship at a journalism lab because someone from the lab noticed their enthusiastic journalism-related tweets, an experimental chef getting the idea create a sea-salt-cured mackerel dish when watching his daughter collect stones on the beach, and an architecture student watching a television documentary on honey bees and subsequently getting the idea of using the hexagonal shape of honeycomb to create a novel building design.

Dr Stephann Makri, UCLIC researcher on the project said:

"*By looking for patterns in peoples' memorable examples of serendipity, we've found that it is more than just a 'happy accident'. It also involves insight – an 'aha' moment of realisation.*"

This led the team to propose a new definition of the phenomenon based on their findings: serendipity is when unexpected circumstances and an insightful 'aha' moment leads to a valuable and unanticipated outcome.

CS Shop – customise your own CS products!

Our online shop has just been re-launched. Students recently organised their own competition to design a new CS logo, which is now available on a range of merchandise to buy, and the proceeds from purchases will be spent by the Staff Student Consultative Committee. Well worth a look **here**.

Don't forget to keep up-to-date with the latest CS News

Why not keep up-to-date with Department's latest work – we're proud to have a big impact on the future of Computer Science. We continue to create innovative technologies that change lives with computers.

Check us out on the web
www.cs.ucl.ac.uk

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Kind regards,

John Shawe-Taylor

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