Spinning out

What started as an undergraduate project is now a major semiconductor business that may revolutionise the consumer electronics market.

Spun out of research from the Department of Computer Science, XMOS has assembled a team of entrepreneurs and scientists led by CEO James Foster and Professor David May. Co-founder Ali Dixon (MEng 2004)(pictured) was a student doing a degree in computer science at the University just three years ago and has seen his project form the basis of one of the University's most significant enterprises.

XMOS has created a new category of semiconductors called Software Designed Silicon (SDS). SDS is designed for high-performance consumer electronics applications, requiring extreme design flexibility at low manufacturing cost.

‘When I was studying I was really excited to see my project materialise into such a significant reality,’ said Ali Dixon. ‘The Bristol region contains the largest cluster of microelectronics design companies in Europe, so being based in the University’s Department of Computer Science was the right place for me to be.’

A Bristol spinout company called Identum, which was the result of a final-year project by Matthew Baldwin (BSc 2002), was recently acquired by the US security company Trend Micro. Identum developed a new form of encryption technology called Identity Based Encryption based on elliptic curves. Matthew said: ‘It’s really nice to have been involved in a company from the inception of the idea, during my undergraduate degree, through to its acquisition.’

Welcome

Welcome to the first newsletter for computer science alumni. Computer science now pervades all of society and computational techniques will be vital in solving the many problems the world faces, from climate change through to security and privacy issues. The department's wide range of interests reflects this and you can read about some of our work in this newsletter.

The department is going to be 25 years old next year and, as we approach this anniversary, the future looks bright. As this newsletter shows we have been successful on various fronts: a new student society and degree programme, increasing excellence in research, and two successful spin-out companies from our graduates.

You can also judge the strength of a department by the achievements of its alumni. In the lead-up to our 25th birthday, we would love to hear about what you have done since you left. We would also love to have you join us at the Convocation Reunion Weekend in July 2009.

Professor Nigel Smart
Head of Department
Microelectronics
In 2006 the department introduced a new MSc in Advanced Microelectronic Systems Engineering, designed to meet the needs of the internationally leading local semiconductor design industry. The programme is run in collaboration with the Department of Electrical and Electronic Engineering and offers a range of taught core subjects such as Computer Architecture, Circuit Design and Design Verification, before progressing into more specialised areas. In addition, the programme benefits from input from the local semiconductor design industry via an Industrial Advisory Board and lectures given by a visiting industrial professor.

The two departments are proposing to set up a new Centre of Excellence in Microelectronics which will expand the University’s undergraduate teaching, postgraduate training and research activities in microelectronics and will act as a forum for engagement with the semiconductor industry.

Conferences
Professor Nigel Smart was programme chair of EuroCrypt 2008 in Istanbul, the annual European conference in cryptography. In 2007, Dr Elisabeth Oswald, lecturer in the department, was the general chair of CHES (Cryptographic Hardware and Embedded Systems) in Vienna, and in 2008 she is the programme chair of CHES in Washington DC. CHES is the main international conference on cryptographic hardware and is regularly attended by representatives of the smart card and electronics industries.

Dealing with complexity
Dave Cliff, Professor of Computer Science, joined the department in July this year to direct a five-year, £15 million research and training initiative for the UK’s Engineering and Physical Sciences Research Council (EPSRC). The programme aims to tackle problems in the science and engineering of Large-Scale Complex IT Systems (LSCITS), and has been planned as response to the needs of current and future industrial and public sector IT systems.

Professor Cliff was appointed director-designate in 2005, and has spent his time since then in a consultation process with academic researchers, the Government and potential industrial partners. He formed a consortium of leading professors from the Universities of Leeds, Oxford, St Andrews, and York, who have worked together to specify a research programme and an Engineering Doctorate training programme.

‘Dealing with complexity in large-scale IT systems is rapidly being seen as a priority in industry and in Government,’ said Professor Cliff. ‘We are increasingly able to create IT systems on which major societal systems are becoming critically dependent, and that are too complex to manage. We need to combine the best research from a number of disciplines to develop new tools for designing and dealing with LSCITS, and to train the next generation of scientists and engineers that will be working on these systems.’

He continued: ‘We have world-class academics in the LSCITS consortium, and we are working closely with industry in a number of sectors. For me, there is no better place than Bristol to be directing this from. The Computer Science Department here is just fantastic.’

Further details of the LSCITS Initiative are available from its website at www.lscits.org.
A new departmental society was set up by students Daniel Brownridge (Computer Science 2004–) and John Bartholomew (Computer Science 2005–) last year. The society, now christened CSS (Computer Science Society) by its elected executive body, has been met with enormous enthusiasm from staff and students alike.

With the success of the recent AGM, CSS has undergone a smooth transition to a new committee under Sophie Johnson (Computer Science 2006–) to start its second year. With a series of talks from top companies and support projects under way for the new term, CSS is looking set to grow in influence and has a bright future ahead of it.

The society aims primarily to serve students by providing an effective voice within the department and by arranging regular socials, speaking events and excursions to enhance the experiences of its many members during their time at Bristol. Events so far include a retro gaming day, two ‘big screen’ Nintendo Wii days and a SIGGRAPH Electronic Theatre production. It also helps to put potential employers in touch with graduates. All current students within the department have automatic membership and students from other departments will soon be able to join for a minimal fee.

The society can be contacted via its website at www.cs.bris.ac.uk/css.

Pictured above: students enjoying the gaming day.

www.cs.bris.ac.uk
NEW STAFF

The department has appointed a number of new staff to expand and consolidate its research base. These new staff include Julian Gough (Computational Biology), Simon Hollis (Architecture), Elisabeth Oswald (Cryptography), Erik Reinhard (Graphics), Sriram Subramanian (HCI) and Bogdan Warinschi (Cryptography), as well as Dave Cliff.

TWENTY-FIVE YEARS OF COMPUTER SCIENCE

In 2009 the University will celebrate its centenary and the Department of Computer Science will celebrate its 25th anniversary. A number of events are being organised throughout the year, and the department would love to meet its alumni and find out what great things they have been doing since leaving Bristol. To capture some of the stories of the department, it has created a web page, www.cs.bris.ac.uk/history, detailing the department’s history. If you have a story to tell, please get in contact.

Mapping the future

The department’s Real-Time Vision Group will be the technical leaders on a project to develop the next generation of mapping systems.

The group is led by Dr Andrew Calway and Dr Walterio Mayol-Cuevas and their work on visual SLAM systems will form a central component of the new project. Worth over £1.4 million, the project will be funded jointly by the Technology Strategy Board, the EPSRC and a consortium of industrial partners.

This high-profile project aims to develop distributed localisation and user-assisted mapping systems based on the fusion of multiple sensing technologies, including the group’s visual SLAM system, inertial sensors, UWB and GPS.

The system will be delivered by an ad-hoc wireless communication network, capable of supporting multiple users equipped with handheld or wearable devices and operating over multiple carrier technologies.

Honorary degrees

In the past year the department has been involved in giving Honorary degrees to: Professor David Milne (MSc 1967, PhD 1969, Hon DEng 2007) (pictured), OBE, chief executive and founder of Wolfson Electronics; Mr Pasquale Pistorio (Hon DEng 2007), former president and chief executive officer of ST Microelectronics; and Clifford Cocks (Hon LLD 2008), who was the first person to invent a practical method for public key encryption.

Alumni update: John Cozens

John Cozens (MSc 1999) spent several months post-graduation as a contractor working on a visual mind-mapping tool for dyslexic students. He then joined U4EA Technologies, a Bristol-based high-tech start-up focused on network QoS, where he was design and development lead for all core user interface aspects, working mainly in Java. To complement this hands-on experience, he took a year out to complete an MSc in Human–Computer Interaction at University College London, with a project on navigation across digital tables with Philips Research in the Netherlands. He has since joined the London office of Nuance Communications, a US-based speech recognition specialist, as a voice user interface designer for enterprise systems across Europe, the Middle East and Asia. john.cozens@nuance.com.