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WELCOME FROM NIGEL CROOK, HEAD OF CCT

Welcome to the Summer edition of the Computing and Communication Technologies (CCT) Newsletter which is bursting with student and staff news stories, student profiles and event reports from the last few months.

One of the highlights for me in this period was the Alumni Conference. It was great to meet so many of our former students and to hear about how their careers have developed since graduating from Oxford Brookes.

There is plenty of news about what our students and alumni have been doing, including winning prestigious prizes (Mahatma Gandhi Award, Procter and Gamble ITMB award), supporting local events (eg Oxford Folk Weekend) and engaging in international Erasmus activities.

Artie, our humanoid robot, received a good deal of local, national and international media attention back in February and March. Stardom has gone to his head and he thinks of himself as something of a celebrity!

Our new robots, Baxter and the Nao twins, will no doubt keep his feet firmly on the ground. Two other notable events I’d like to draw your attention to are the Live Friday at the Ashmolean, which showcased Brookes TV and Artie, and the first Robot Sumo competition, which engaged staff, students and children from local schools in a robot v robot tournament. There is much to enjoy reading about in this edition.

Feast yourself!

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Cover illustration by Merlin Porter
IMAN ABUBAKER

Iman is a final year student on the Information Technology and Management for Business (ITMB) programme. For her final year, she has designed an e-learning system for use in schools in Nigeria. The aim is to inspire and support schools to take action to enhance the education of every child, regardless of their school or social or economic background, by providing access to e-learning technologies whenever and wherever they need it.

She met with the Dean of Studies at her high school in Nigeria and they came up with the requirements. The web-based learning environment system that she has developed provides students with a user-friendly interface which gives access to each subject, together with all the class learning material, the timetable, homework details, latest news streamed from a Nigerian news website, important dates and school club information.

[Video link: http://youtu.be/D0AWWroGGuU]

TERRY Mukonka

Terry is a final year student on the Information Technology and Management for Business (ITMB) programme. For his final year project he has developed a mobile application for use in a nursing home.

The application provides a paperless information system that enables healthcare staff to gain access to relevant patient information on a hand-held device such as a tablet. It also allows key health indicators to be updated regularly through a user-friendly interface. The advantage of this system is it can provide a cost-effective method of collecting and storing patient data which can be efficiently monitored by medical staff from a remote site.

The mobile application is currently designed for use on Android with Flash 4.5. Future developments include developing an iOS version and including NFC technology to automatically gather data from patient monitoring equipment.

[Video link: http://youtu.be/i6ro54ywKxc]
TOM APPELYARD
Tom is a final year student in Computer Science. For his project he has pursued his interest in artificial intelligence and has designed a virtual ecosystem. This system provides a platform for investigating the delicate ecosystem balance between carnivores, herbivores and plants. The model allows the impact of key parameters such as animal numbers, communication between animals and food supplies to be explored. The model includes a graphical interface to illustrate the movement and evolution of the animals.

WILLIAM HEATHCOTE
William is a final year student studying Computer Games and Animation. For his final year project he has designed a game based on a maze with a knight in armour character to explore the maze. The character model is developed using a hierarchy of basic primitives representing individual segments of the armour. Texturing was used to give the required appearance and the motion capture facility at Oxford Brookes was used to produce realistic movement.

The maze was designed including burning torches with crackle and flicker sound and light effects. Players enter the game through a menu interface and select character options and the character can move around the maze and interact with the environment. The aim of the game is to navigate the character through the maze.

The project has allowed William to study the workflow towards the construction of computer games through the use of digital modelling, motion capture, level design, game scripting and character control methods.

http://youtu.be/51IzmEwKHQM
Jonathan is a final year student on the Network Computing programme. His project is an analysis of voice over MPLS. He has used the GNS3 simulator with models for a VoIP phone, the Asterisk soft switch and a network consisting of switches and routers supporting MPLS. A call was set up between two VoIP clients and capturing and the Wireshark packet analysing software was used to check that the packets were correctly routed. The Opnet simulation software was used to quantitatively compare the performance of this network using MPLS to a conventional IP network. The results show that using MPLS the network can handle a larger volume of traffic without loss of packets.

Manuela is a final year student in Sound Technology and Digital Music.

Manuela's project was sound design, recording, editing, synchronisation and mixing for a short film produced by students in the Arts department. Manuela had to undertake using some of her own sound synthesiser programming to create some of the sound effects used, in addition to planning, undertaking and logging the audio recordings on location and in studio for the film soundtrack.

The audio editing and mixing then had to be done to a tight deadline, synchronised to the final edit of the film, as the video editing stage had taken a long time. Despite working under this pressure, an excellent result was achieved where the soundtrack really complements the visuals on the screen.
OXFORD FOLLK WEEKEND
TECHNICAL VOLUNTEERS

A group of students from the BSc in Sound Technology and Digital Music volunteered to work as technicians for the 2014 Oxford Folk Weekend – a folk music festival based in Oxford city which took place on 25-27 April.

ST GILES’ CHURCH RE-OPENS WITH HELP FROM SOUND TECHNOLOGY STUDENTS

St Giles’ church in Oxford re-opened in March, after extensive refurbishment, with a celebratory concert by the David Gordon Trio. Sound and lighting support was provided by students on the BSc in Sound Technology and Digital Music using the new X32 digital mixing platform – allowing students to remotely control the sound system with an iPad.

Many congratulations to Jamie Donaldson, one of our ITMB students, who won a prize awarded by Procter and Gamble for his contributions to the ITMB All Student Day (South) which was held at the Savill Court Hotel, Surrey on 12 March. Several ITMB students from Oxford Brookes went to this event which was attended by more than 200 students, 70 employers and 20 university staff from around the country. The students enjoyed a day of inspirational talks, skills sessions, competitions and a panel session.
MEDIA STUDENTS AT THE UNIVERSITY OF TORINO

Five final year students from the BSc Media Technology, BSc Multimedia Production and BSc Sound Technology programmes and two members of staff attended a two week Erasmus funded Intensive Training Programme at the University of Torino, Italy. The Brookes’ students worked alongside other students and staff from Italy, Germany, Bulgaria, Portugal and Turkey. By the end of the programme, the international student teams produced short videos on sustainable transport systems, energy saving buildings and recycling of e-waste.

The videos they produced can be found here:

https://www.youtube.com/user/eutvuniversity

Picture below, left to right: Harry Pill, Mila Vodenitcharova, Danny Spiteri, Isabel Zippert, Joe Carr (Supervisor), Bethan Evans

PROCTER AND GAMBLE SPECIAL MENTION

Over the past five months, Procter and Gamble have provided a platform for ITMB 1st year students to work remotely in teams across universities to solve business challenges and innovate, leveraging all of the skills they have been taught over the first semester.

The top remaining teams were taken to the P&G offices in Newcastle to fight it out for a place on the IDS Challenge, this year in Frankfurt. It was a fun, action packed day that the students seemed to love.

P&G issued a special mention to Mayo Runsewe (Oxford Brookes). He was part of the team with Andrew Smith (Lancaster). Both students gave a great account of themselves and are shining examples of the quality and professionalism of candidates available from the ITMB degree.
MEYER SOUND SEMINAR IN OXFORD

In April, Meyer Sound sent an instructor to Brookes to give a 4-day intensive acoustic measurement and system calibration seminar to staff, students and industry visitors from as far away as Malaysia. This year’s seminar was the biggest yet, utilising the loudspeaker hanging capabilities of the Students’ Union Venue in the Helena Kennedy building in order to suspend a vertical array of loudspeakers giving students the experience of the engineering hardware in addition to the software control capabilities.

For more information go to: http://meyersound.com

Meyer technical instructor, Mauricio Ramirez

The Meyer technical instructor, Mauricio Ramirez (aka ‘Magu’), is from Mexico and he explained that he was not originally trained in sound, but he had done a degree in Business Administration with Computing. After that he got involved with music and sound systems by working with bands – he went on tour with a famous Mexican band, Maná (en.wikipedia.org/wiki/Maná), and was involved in the sound mixing. He learned about the equipment by reading the manuals and experimenting with the equipment but realised that there were many things that he did not know. To get a better technical understanding he read books on sound systems and acoustics and then did a two year course by Meyer which transformed his understanding. He was then asked to give a set of three lectures on sound at a university in Mexico and he found that he had acquired so much information that he needed more time to cover all the material. Although he does not have a formal engineering background he teaches based on his own experiences. He now travels around the world giving presentations on the Meyer Sound equipment and he has given these lectures annually at Brookes for the last five years.

He noted that in some presentations the audience have considerable practical experience but limited technical background. Here at Brookes, the students have a good technical background but need more practical experience. On reflection he would say that doing a university course first is a more efficient way to learn the subject as it establishes the theoretical background. A combination of skills is required, including electronic design, digital signal processing and IT to understand how the devices work, as well as acoustics to understand how the sound system is applied. For someone who wants to be in an operational role such as entertainment, TV, theatre or festivals, then an application-oriented course such as sound systems would be most appropriate.

Meyer Sound has design engineers who design new products; Mauricio’s role is to act as a first user and evaluate the products and train people to use them. The Sound Technology and Digital Music students from Oxford Brookes would be well prepared to follow a career as operational sound engineers, but some of them may also choose to specialise further in electronics or DSP and move into the design area.

He commented: “I have been fortunate in that I have been able to do a job which I enjoy and which is also my hobby and gives me the opportunity to travel – I have visited about 65 countries with my work. This has given me many contacts and we are able to share information by social media so if I have a problem I always get someone to provide a quick response.”
**SOCIETY NEWS**

**Brookes Sound and Light Society**
A group of students on the Sound Technology, Media Technology and Multimedia Production BSc courses have formed the Brookes Sound and Light Society in order to provide technical services to other student societies who specialise in music and performance. These include the Brookes Fortune players, the Opera Society and the Brookes Jazz Society (Big Band) who have a full schedule of events and recordings which are all being undertaken by the CCT students.

**Computing Society**
- The computing Society sent a team to the Angel Hack in June, which was hosted at Google Campus in London.
- George McDonnell and Harry Kirkman are working on a mobile app for student clubs in Oxford, with two business students who are starting their own company.
- George McDonnell is also developing a mobile app for David Festenstein who has identified seven key steps for recovering from illness.

**Game Development Society**
Several students have formed a Game Development Society which is actively working on a release-quality title using the resources taught on the Game Development module.

Edwin Lyons, a Technical Lead at Mind Candy, was invited to Oxford Brookes to give a talk to the Games Development students. Mindy Candy is the company, formed by Michael Acton-Smith (see picture), which created the Moshi Monster characters. He also gave feedback on the students’ coursework and game projects. He was very impressed and one student was offered an internship at the company as a result of their project.

**The Robotics Society**
have been working hard on their entry for the robot sumo competition.
I graduated with a BSc in Media Technology from Oxford Brookes in 2009.

In order to do my dissertation I completed an internship at Vicon. The internship and my dissertation combined got me a job in the motion capture industry which led me to come back to Vicon in 2012. Therefore through my degree I immediately got an introduction to the industry where I have continued my career since.

I am now Assistant Project Manager at Vicon in Oxford. My responsibilities include assisting in the management of development projects, communicating project status and ensuring test planning is complete. I get to be involved in a variety of industries covering life sciences, engineering and entertainment. As part of my new role I will get to have insight into a wider scope of projects which will be great experience, and will keep me busy!

Through doing my degree I gained experience and learned the basics of a wide variety of applications for technology in the media, which was a good starting place to get me into the industry. I also had my first hands-on experience with a motion capture system at Brookes.

I have been privileged with lots of opportunities in my career so far, but my new job role is very exciting as I get to have project management training, which will open up lots of doors for me not just at Vicon and in motion capture but also for project management in other industries.

My advice to current Oxford Brookes students is to take every opportunity you get for work experience and then work hard! These are invaluable for teaching you lessons on what you will enjoy as much as what you can do and can provide great career opportunities.

My best memories of Oxford Brookes are laughing a lot and enjoying studying, especially the TV Production module.

Oxford is a great place to live and study because although it’s small it’s also vibrant, especially the student life. There is a lot to do and you’re never far away from the countryside. I would recommend Oxford Brookes University to anyone thinking of enrolling on a degree course because the staff are friendly and are always willing to help you out when you ask. Oxford itself is a great student town which many people don’t leave even after graduating!
I am Nasir Faruk. After graduating with a First Class Honours degree in physics from Kano State University of Science and Technology, Nigeria in 2007 I was awarded a scholarship by the Jigawa State Scholarship Board to study for a master’s degree in Mobile and High Speed Telecommunication Networks at Oxford Brookes University. I graduated with distinction from this programme in September 2010.

When I completed the MSc, a new Department of Telecommunication was created at University of Ilorin, Nigeria for which telecommunication graduates were in demand and so the experience from Brookes enabled me to apply for a lecturing position.

I joined as a lecturer and junior research fellow in Telecommunications in December 2010 and since then I have been lecturing courses in the area of telecommunications and networking, optical networks, multiservice networks, cellular systems and mobile communications. I have also been carrying out research towards a PhD Degree in Electrical and Electronics Engineering. My research work focuses on spectrum management, cognitive radio communication, channel modelling, disaster and public safety networks and universal rural telecommunication networks. I have now published over 15 articles in journals and conference proceedings. I have also carried out research with the company, Wavetek Nig Ltd – a global ICT solutions provider.

Oxford Brookes provides students with an excellent environment for learning. It provides access to a broad range of up-to-date facilities, specialist laboratory and workshop equipment. The degree enhanced and extended my knowledge on mobile cellular communications, fixed line networks, network planning, design, analysis and optimisation.

I learned the use of professional planning and analysis tools such as the ASSERT3G, RANOPT and OPNET for mobile systems, fixed line (copper and fibre link), data networking and in practical implementation of fixed line networks. The knowledge gained using RANOPT enabled me to use other planning tools like Genex Probe, Altol, WiMAP-4G and other software. My MSc dissertation provided me with research skills that provided the basis for my current research work and which I have been applying to problem solving in industrial situations. The training I received at Brookes has launched my career in academia.

My advice to students at Oxford Brookes is that they should make the best use of their time and maximise their access to the facilities and knowledge available. Students should also make use of the support facilities. For example I learned how to prepare a resume at Brookes, which proved essential during my search for a job.

I have many good memories from my time at Oxford Brookes; in particular I miss my soccer team mates and all the friends that I have made from diverse parts of the world.

In the future I want to expand my understanding of networks and develop innovative systems that make efficient use of resources. I want to conduct research that will help towards economic development.
ANDREW CARNELL
AND TJEERD SCHEPER

Over the last year and a half, Andrew Carnell and Tjeerd Olde Scheper have developed a proof of concept of the Rate Control of Chaos applied to Wind Turbines.

They also began a theoretical proof of concept applied to combustion engines. In collaboration with Dr Stephen Samuel from the Department of Mechanical Engineering and Mathematical Sciences, they have now received Higher Education Innovation Fund (HEIF5) funding for one year, to complete this proof of concept in a physical engine. They hope to bring this to a near-to-market product of a dynamic engine control unit.

HONG ZHU, IAN BAYLEY
AND MUHAMMAD YOUNAS

They organised the 8th IEEE International Symposium on Service-Oriented Systems Engineering which was hosted at St Catherine’s College, Oxford University. David Duce was the general chair of SOSE 2014 and Pro Vice-Chancellor Prof Alistair Fitt gave the welcome speech at the opening session.

This was co-located with IEEE MobileCloud 2014 and Cloud Tech Summit 2014, with five talks by industry leaders. Many PhD students helped with this: Bedour Alshaigy, Basel Yousef, Hussain Alzayer, Conrad Ogunyadeka. Social events included a guided tour of Oxford city centre.

DR MUHAMMAD YOUNAS

Muhammad was the PC Co-Chair of the 28th IEEE International Conference on Advanced Information Networking and Applications (AINA-2014), Victoria, Canada, 13-16 May 2014. He also had a paper: “Mobile application platform heterogeneity: Android vs Windows Phone vs iOS vs Firefox OS” (with T-M Grønli, J Hansen, and G Ghinea), presented at this conference.

IAN BAYLEY

Ian has been tutoring a student at Magdalen College School. The student is preparing an essay on fractal image compression as his entry to the Waynflete Prize, which all Lower Sixth students are required to enter. A recent journal article by Clare Martin and Sharon Curtis was used as part of the teaching, and Ian also drew upon his experience teaching image compression techniques to Brookes students.

CIGDEM SENGUL
AND NIGEL CROOK

They have been awarded £9k of University Central Research funding to begin work on building an Internet of Robotic Things (IoRT) laboratory in the Turing Building. The IoRT lab will enable synergistic research in robotics and Internet of Things to create intelligent robotics and applications of the future.

ABUSALEH JABIR

has received Higher Education Innovation Fund (HEIF5) funding for a project entitled: “Industry Scale Demonstrator for Multiple Error and Attack Tolerant Digital Integrated Circuits”. This project seeks to produce an industry scale demonstrator to support the commercialisation of novel patented error correction technology for the design of digital integrated circuits, which can correct multiple errors simultaneously, have significantly less hardware complexity and hence require less power, compared to traditional approaches.
Abusaleh has had a paper accepted for publication with the IEEE Transactions on Very Large Scale Integrated Systems (IEEE Transactions on VLSI). “A Low Complexity Multiple Error Correcting Architecture Using Novel Cross Parity Codes over GF(2^m)”, by M Poolakkaparambil, J Mathew, A Jabir, and D Pradhan.

DR DONGMEI LIU, PROF HONG ZHU AND DR IAN BAYLEY

A research paper entitled “Transformation of Algebraic Specifications into Ontological Semantics Description of Web Services” co-authored by Dr Dongmei Liu, Prof Hong Zhu and Dr Ian Bayley has been accepted by the International Journal of Service Computing for publication. Dr Liu is an associate professor at the Nanjing University of Science and Technology, Nanjing, China. She visited the Applied Formal Methods Research Group for 12 months from October 2012. The paper is one of the outcomes of the collaborative started during her visit. Before this journal paper, they have also jointly authored and published three conference papers.

CIGDEM SENGUL

Cigdem’s paper: “Self-optimisation of coverage and capacity based on a fuzzy neural network with cooperative reinforcement learning”, with S Fan, and T Hui has been accepted by the EURASIP Journal on Wireless Communications and Networking. The paper has been submitted after Cigdem’s visit to Beijing University Post and Telecommunications (BUPT), in June 2013 and explores self-optimisation of coverage and capacity, by automatically adjusting antenna tilt and power using a fuzzy neural network optimisation based on reinforcement learning (RL-FNN). Our results show that RL-FNN performs significantly better than the best fixed configuration proposed in the literature. Furthermore, this is achieved with significantly lower energy consumption.
BROOKES TV NEWS, NEW SERIES

The new series of BrookesTV News has made a good start. The first 2 episodes are already online and getting great ‘ratings’ and a large number of views:

Episode 1 had around 200 views in 4 days: [http://www.youtube.com/watch?v=XJ6kCO1uKNI&list=PLD00395D7738D36A0&feature=share&index=1](http://www.youtube.com/watch?v=XJ6kCO1uKNI&list=PLD00395D7738D36A0&feature=share&index=1)

Episode 2 had around 150 views in 1 day: [http://www.youtube.com/watch?v=tx7GWE9_r6E&list=PLD00395D7738D36A0&feature=share](http://www.youtube.com/watch?v=tx7GWE9_r6E&list=PLD00395D7738D36A0&feature=share)

Here’s a link to the BrookesTV News playlist: [http://www.youtube.com/playlist?list=PLD00395D7738D36A0](http://www.youtube.com/playlist?list=PLD00395D7738D36A0)

LIVE FRIDAY AT THE ASHMOLEAN

The Ashmolean Museum in Oxford has ‘Live Friday’ dedicated events which are open to the public. On 14 March Oxford Brookes held a special event to mark the 150th anniversary of the university and to showcase some of our work. The Computing and Communication Technologies Department were actively involved in this event.

Our thespian robot, ‘Artie’, proved to be a very popular exhibit, with queues of up to 60 people at a time wanting to interact with him.

The Media staff and students set up and ran the Brookes TV Showcase with guest appearances on the broadcast from the university’s Chancellor Shami Chakrabarti CBE and the Vice-Chancellor Prof Janet Beer, who were both very impressed with the interview skills and the professional standard of the production.

‘HER’ TALK AND Q&A AS PART OF THE OSF

Nigel Crook was invited to take part in the Oxford Science Festival with a showing of ‘Her’ at the Ultimate Picture Palace on 21 March. After the film he gave a short presentation about Artificial Intelligence and led a 30 minute Q&A session.
OUTBURST FESTIVAL AT THE PEGASUS THEATRE

John Twycross, Nigel Crook and Computing MSc Students Joey Clouvel and Jean-Francois Rococo led two events at this year’s Outburst Festival at the Pegasus Theatre on Saturday 10 May. John ran a Games Jam workshop, which gave visitors the opportunity to experience the planning, designing and creation process in developing their own games. During this workshop, which was very well attended, the visitors were able to design their own game level which was then added to a playable game during the session. Nigel, Joey and Jean-Francois led a comedy club session in which Artie the robot was the comedian. This was done in collaboration with researchers from Queen Mary University who had developed the code which controlled the robot. The comedy sessions ran four times during the day. In each session, the audience took part in live research which studies the effect of good and bad performances on audience participation. Artie did manage to make the audience laugh on a number of occasions, but despite being a robot, his comic timing was not always perfect!

ALUMNI CONFERENCE

The 3rd CCT Annual Alumni Conference took place on Wednesday 2 April in the Abercrombie Atrium. The event was a great success, with around 20 alumni guests plus current undergraduate and postgraduate students. It was organised and led by David Lightfoot. The conference was opened with a welcome from Artie the robot (via Skype) and from Nigel Crook.

Each of the alumni gave a short presentation introducing themselves, what they had studied at Brookes and what they have done since they had graduated. It was wonderful to hear about the rich diverse set of careers our students progressed into after graduation, with some reaching quite senior positions in major organisations. Tjeerd Olde Scheper gave a short presentation on the proposed BSc programme in Computing and Robotic Systems and the students and alumni were introduced to the mentoring scheme that the department has started.

MEDIA APPEARANCES

Artie and Nigel Crook have made a number of media appearances in the last few months:

- 10 March: BBC Breakfast and NewsRound (high trend on Twitter).
- 12 March: BBC Radio Oxford – David Prever at Drivetime. Artie was essentially co-host, giving various links, singing etc between 4 and 6pm. Nigel was interviewed by David Prever at 4.20pm and 5.20pm with a final chat at 5.50pm. The BBC filmed some of this and put it on their Facebook and Twitter feeds.
- Friday 14 March: BBC South Today interviewed Nigel Crook, Steve Barker and Artie at the Ashmolean.
- Tuesday 18 March: ITV Meridian came to the Cognitive Robotics Lab to film Artie and to interview Nigel Crook and some students in the new robotics lab.

As part of a series on Wheatley, BBC Radio Oxford interviewed Artie the robot and Nigel Crook for the Breakfast Show on Thursday 3 April. This was a five-minute broadcast in which Nigel spoke about the future of robotics and the likelihood of creating at some point in the future a robot which would be regarded as a person.

Artie the Robothespian robot was invited to be a temporary ‘Anchor’ in CNBC’s Squawk Box programme on Thursday 1 May. Nigel and Artie were interviewed towards the end of the programme about the future of robotics and the robotics industry in the UK.

The interview can be found at:

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