Welcome to the eighth Spotlight newsletter from the School of Engineering and Design.

The year of 2012 witnessed the School enjoying continuing success: meeting all its recruitment targets; heading a multi-million pound Research Centre (see adjacent); achieving top rankings in both national and international competitions; participating in diverse and internationally acclaimed research, and not least to mention, the pride all School staff feel on the continuing success of our graduates enjoying high graduate employment. We now look to the future, with the establishment of a suite of new and exciting undergraduate and postgraduate courses starting in 2013, and some in the planning stage for 2014 (see back page). I sincerely hope you enjoy reading the many articles highlighting this success within, and take this opportunity on behalf of the School to warmly welcome all the new staff that joined us in 2012.

Tom Kissack, Marketing and Recruitment Manager

Research award funds a new Energy Efficiency Centre

Brunel welcomes a £12 million award for an Energy Efficiency Research Centre

The Centre for Sustainable Energy use in Food Chains will be led by Brunel University, partnered by the Universities of Manchester and Birmingham.

The Centre will be one of five new End Use Energy Demand (EUED) research centres that will look into the complexities of energy use across society, and how energy can be both saved and used more efficiently.

The Centre is led by Professor Savvas Tassou, Head of Brunel University’s School of Engineering and Design. Professor Tassou said: “The new interdisciplinary centre will bring together internationally leading researchers from the Universities of Brunel, Manchester and Birmingham to address important challenges of energy reduction and resource efficiency at all stages of the food chain from farm gate to plate.

We will work very closely with key stakeholders to ensure that the research not only addresses the needs of the food industry and Government targets for reduction in energy use and carbon emissions, but also addresses consumer needs and well being.

The Centre will develop innovative approaches, processes and technologies for energy demand reduction in all stages of the food chain: production, distribution, retail and consumption. Researchers will work closely with some of the UK’s major food manufacturers, retailers, equipment manufacturers, scientific and technical providers and Knowledge Transfer Networks.”

Professor Tassou added: “This is a significant achievement for Brunel and provides a platform for us to build on our existing food related research and commercial activities. It will make Brunel one of the key universities in the UK and internationally for energy and food sustainability related research, and we look forward to working with our academic and industry partners as well as the wider community, to accelerate progress in resource efficiency of the food sector.”

Professor Savvas Tassou
My name is Dr Mark Jabbal, Lecturer in Aerospace Engineering. I had the privilege of leading a team of student aerospace engineers from Brunel University in designing, building and flying an engineless, unmanned glider 22 miles across the Bristol Channel. The record-breaking achievement was part of a James May’s Toy Stories Special, ‘Flight Club’, aired on the BBC in December. Being involved with the glider project has been a whirlwind yet wonderful six months, from receiving the initial call from Tom Whitter (of Plum Pictures and Director of Toy Stories) on 22 March 2012, to successfully flying the glider into model aviation history on 22 September 2012. When I heard of the challenge and the scope of involvement for our student aerospace engineers, I knew it was an opportunity too good to turn down.

The timing of the project was fortunate on two fronts. Firstly, Plum Pictures had a one week window in April to construct the glider in an aircraft hangar at Wycombe Air Centre, which coincided with the Easter holidays at Brunel. Secondly, most of the UG and PG students I approached about taking part had recently completed major group projects related to building and flying model aircraft. So it was invaluable to have their expertise and practical know-how, as well as presenting them with a unique setting to apply what they had previously learned – a win-win situation!

The production team and the Toy Stories Chief Engineer visited Brunel at the end of March to discuss the project in detail. The glider to be built was a Slingsby T45 Swallow, reminiscent of gliders which James May built as a kid. Upon close inspection of the glider plan, it was evident that the design was not particularly aerodynamic and therefore unlikely to fulfil its mission. This was to be confirmed when I, and two members of the student team, George Schofield and Adam Todd, assisted in testing a large-scale replica of the glider in a wind tunnel. The glide ratio, a measure of the efficiency of an aircraft, was found to be 14:1 for the glider, which is quite poor.

It was decided by the Brunel team that a redesign of the glider wing cross-section would be required to improve its aerodynamic efficiency. There were only a few days available to come up with a new design, such that all the modified wing parts could be laser cut by Traplet Publications (suppliers of model aircraft kits) and delivered to the hangar in time. George led the redesign of the wing section using an aircraft modelling software called ‘XFLR5’, which was able to show how changes in the wing section influence the glide ratio. A new aerofoil section was chosen that was expected to increase the original glide ratio to 20:1, which would in theory allow the glider to successfully complete its mission.

With the new wing parts cut, the student engineers set about assembling the wings, as well as the horizontal tail and fin. Many of the students had already worked together in smaller teams as part of group projects at Brunel, which included building: a model aircraft for the annual BMFA Heavy Lift Challenge; an electric glider; a solar glider; and a model aircraft with morphing wings. The students quickly assimilated the task at hand, whilst new collaborations were formed between aviation and aerospace students and undergraduate and postgraduate cohorts.
It would be several months until the flight attempt was made. Firstly, there had been several delays over the summer due to the poor weather. Secondly, the proposed method of launching the glider at altitude was changed from a balloon to a helicopter, with the latter requiring a tethered box to be devised from which the glider would be released. Thirdly, there were several forced changes to the route. The first choice of flying across the English Channel from Calais to Dover didn’t receive the approval of the French authorities. The decision was taken to switch the attempt to the Bristol Channel, whilst still maintaining the 22 mile distance record goal.

Brunel student and RC model aircraft enthusiast Thomas Small (Tom) was given the big responsibility of ‘glider spotter’ and being at the helm of the glider controls. Tom was based in an airborne helicopter tracking the glider after its release and was in regular communication with James May and the production team, who tracked the glider from a speedboat. Although the glider was designed to fly free flight, it was fitted with autopilot and GPS to ensure the correct flight course would be maintained. It could also be manually overridden by Tom if the glider was to encounter any difficulty during flight or needed to be brought down in an emergency.

The first attempt from Ilfracombe in North Devon to Oxwich Bay in South Wales was severely hampered by bad weather and visibility, such that the eventual launch height of the glider was only 2000ft – some 6000ft less than the required launch height. Consequently, the glider only completed 2.5 miles before hitting the sea. The second attempt on the following day, which would be the final opportunity for the attempt, looked more promising in terms of the weather. An easterly wind however meant that the flight route was changed for a second time: from Ilfracombe to Lundy Island, which was fortunately still 22 miles. With high visibility, the helicopter was able to reach an altitude of 10,000ft before deploying the glider. The final attempt proved very successful, with the glider reaching Lundy Island with approximately 2000ft altitude to spare. Mission accomplished and a new British record!

Dr Mark Jabbal, with sincere thanks to the team of Brunel student engineers (in alphabetical order):

- Semiu Abd-Salami
  MEng Mechanical Engineering with Aeronautics
- Alex Allen
  MSc Aerospace Engineering
- Stephen Drew
  MEng Aviation Engineering with Pilot Studies
- Matthew Good
  MEng Aerospace Engineering
- Jonne Jeyalingam
  MEng Mechanical Engineering with Aeronautics
- James Kietly
  MEng Aerospace Engineering
- Max Kirby
  BEng Aviation Engineering with Pilot Studies
- Darshan Mistry
  MSc Aerospace Engineering
- Scott Phillipson
  MEng Aviation Engineering
- Daniel Pollard
  MEng Aerospace Engineering
- Morgan Sathasivam
  MSc Aerospace Engineering
- George Schofield
  MEng Aerospace Engineering
- Thomas Small
  BEng Aviation Engineering with Pilot Studies
- Adam Todd
  BEng Aviation Engineering
BSc Multimedia Technology and Design 2012 graduate Mina Nishimura has won a New Designers Associate Prize for her final-year project, ‘Shopstar’.

The New Designers Awards and Associate Prizes are given by industry organisations to the most talented newly-graduated designers that take part in their graduate exhibition each year. Over 3,500 students took part in New Designers 2012 at the Business Design Centre, Islington, showcasing the work of the nation’s emerging design talent.

Mina was awarded the New Designers Cyber-Duck Associate Prize, which included a Raspberry pi and three months’ work experience with Cyber-Duck, an award-winning digital agency. “When I got the prize it was actually my birthday that day so it definitely made it an unforgettable one!” said Mina. “The award came with a Raspberry pi - it’s a credit card-sized computer and there’s a huge waiting list to get one! I’m also really pleased to win a three month’s internship.”

Her project ‘Shopstar’ is a time and money saving personal shopping assistant in the form of a mobile web application. The application aims to save you money and increase the efficiency of shopping at your local supermarket.

The judges praised Mina’s project for its excellent user experience, showing attention to detail and visual design.

Mina commented: “I wanted to go for a minimalistic look with no decorations or unnecessary things in the way. Big icons and straightforward functionality was the key focus of the design with consideration to the limited screen size of the phone as well as user needs and wants.”

Mina further said: “I’m currently in the fourth month of the start of my career as a Design Engineer (I like to call myself an Interaction Designer) at Great Fridays. We are based in Oxford Circus and Manchester where we create product and services that challenge conventions, ask questions and break rules; essentially turning design into profit. My role in the company is to create iPad prototypes that serve to demonstrate the user experience and visuals the team has envisioned. Without a working prototype, it is difficult to fully understand the interaction between the user and the product whilst effective user testing is almost impossible with static designs and wireframes alone.”

Simon McNamee graduated with a BSc in Product Design Engineering in 2012, and is now employed at Dyson as a Graduate Design Engineer.

Simon’s Design Major Project - Rethinking the quick release system on sailing trapeze harnesses to improve performance, safety and user experience. The project involved user research, conceptualisation, prototyping, testing, technical design and human factors. The patent is pending and was awarded third Prize in Brunel University Dragon’s Den competition, 2012. The project was also a finalist in the RAE Innovation Hothouse competition, presented to the panel on 21st September as part of London Design Festival.

Marco Ajovalasit, Design Lecturer at Brunel University, commented:

“Simon achieved a very strong first class honours degree demonstrating an exceptional understanding of the engineering details and design specifications of his major project “Off the Hook” - a quick release mechanism for sailors. Simon beautifully merged the underpinning mechanical principles, design process and manufacturing knowledge to a complete and working prototype. His prototype, designed and manufactured by him in Brunel’s workshops, has attracted the interest and approval of several experts in the field, and allowed Simon to present his major project at the RAE Innovation Hot House competition, where he got through to the final stage in September 2012 and presented his ideas as part of the London Design Festival.”
MSc Building Services Engineering with Sustainable Energy graduate wins prize at the CIBSE Young Engineers Awards

Chris Marien, a Brunel MSc Building Services Engineering with Sustainable Energy graduate, won second prize in the CIBSE Young Engineers Awards 2012 held at I MechE on the 11 October 2012.

Seven students were shortlisted for the Graduate of the Year Award and Chris Marien, who recently graduated from Brunel having completed the Distance Learning programme, was runner up. The shortlisted candidates gave a short presentation on ‘How will I help to engineer better communities’ in the IMechE main lecture room, with an audience of about 150 and in the presence of the current CIBSE President (David Fisk), and the ASHRAE President (Tom Watson), who were both in the judging panel. Immediate CIBSE past President Andy Ford and President elect George Adams were also present.

Brunel University students win Engineering Insight (EI) Prize

Four final-year BEng Mechanical Engineering students at Brunel University took on a design brief from a leading global water technology provider Xylem in a new initiative aimed at promoting closer links between industry and academic institutions.

Xylem’s Engineering Insight programme engages with mechanical engineering students studying at renowned IMechE accredited institutions, providing them with real world design engineering experience using products from Xylem’s global brand portfolio and based on actual scenarios. The EI Engineering Award is given for a group project and there is also a prize for an outstanding individual student. All participating students receive a copy of Engineering Formulas by Kurt Geick.

Project criteria for the group EI Engineering Award is set by Xylem Flow Control’s engineering department and the best submission selected by Xylem engineers.

Two teams of Brunel students elected to work on the challenge Xylem presented for their final year 3-month project. The brief from Roger Bartlett, Head of UK Engineering at Xylem’s Flow Control business, was to design and develop a device to act as a safety mechanism to protect downstream equipment on oil rigs within a target production cost of £70 per unit. The winning team was judged to have analysed the brief to come up with a practical product specification, applied engineering CAD software tools in the most effective manner, and utilised existing manufacturing techniques to meet all the criteria within budget.

Dr Alasdair Cairns, Senior Lecturer, Brunel School of Engineering and Design, comments: “Working on a project as a team is how our students will be expected to work in industry. Partnerships such as Engineering Insight are extremely valuable to Brunel and other academic institutions as they bridge the gap between theory and practice and help students with their job search after graduating.”

Roger Bartlett added: “The winners demonstrated outstanding depth of skills and commitment throughout, including generating several concepts at the start of the project, and selecting a pragmatic design which integrated the functions of two valves in a production-viable manner. The team’s reporting and adherence to budget were also excellent.”

At the prize giving ceremony held at Brunel University, Alistair Jay, Andrew Smith, Mihir Meetarbhan and Robert Ludeks were congratulated by Professor H. Zhao, Head of the Mechanical Engineering Department, Dr Cairns and Dr. Ian Gilchrist, Lecturers at Brunel. Andy Sealey of Xylem presented the winners with engraved green crystal trophies, a Samsung Galaxy tablet with case, the latest Kindle e-reader and engraved Parker pens.
A team led by Stephen Green, Design Undergraduate Admissions Tutor, spent two weeks in China taking part in a cross cultural initiative to promote the role of design in addressing the challenge of making more effective use of industrial waste.

Based at Guangzhou Academy of Fine Arts, one of China’s leading universities for design, 16 teams from six Chinese Universities and 10 from the UK, tackled the challenge arranged with the support of the British Council and the Valuda Group, a major Chinese recycling organisation.

At the closing ceremony, Stephen’s team was awarded the event’s top prize for their concept to transform waste industrial barrels into household tools using minimal manufacturing processes, but adding value through elegant functional design and the creation of a unique brand based on a traditional Chinese character, ‘Pin’ meaning products with quality and integrity.

Three Brunel Design students were part of the group travelling to China. Laura Hodges, part of the winning team, commented: ‘This trip gave us incredible insights into how the design profession is developing in China, and the commitment amongst everyone we met to use design to tackle environmental issues. Winning was an unexpected bonus – we had a great team!’

Brunel Aerospace students ranked top UK university in the BMFA Heavy Lift Challenge

On the 9-10th June 2012, Aerospace Engineering students competed in the British Model Flying Association (BMFA) 2012 Heavy Lift Challenge competition, gaining 1st place amongst UK universities and 2nd placed overall.

The BMFA Heavy Lift Challenge is a competition open to students across Europe to design, manufacture and demonstrate the flying capabilities of a small remote controlled model aircraft, with the main aim to maximize aircraft payload to empty mass ratio. Overall the Brunel Team conducted three successful flights with zero, 2kg, and 4kg payloads, achieving a maximum payload to mass ratio of 1.82, the highest achieved at the competition over the weekend. The aircraft was designed and built to compete in the Heavy Lift Challenge as part of fulfillment of the Level 5 MEng degree programme final-year with the students incorporating computer aided design, structures, and aerodynamics/flight mechanics software packages and analysis tools within the design and build process.
At the end of my placement I had a verbal job offer from Motorola, to come back after my final year and continue doing the same job on a full-time basis. I graduated from Brunel University in July 2012 with a first class honours degree and also as a Brunel 2012 IET Prize winner, being the best student in my Subject Area. At this stage, I had another job offer from Vodafone UK. Vodafone offered an irresistible scheme that will see me work on their Network, IT and Service Operations departments plus international experience in India and Portugal. In 18 months I will have more exposure to Vodafone business areas than some staff who have been working for Vodafone for about 10 years! In summary, it’s true I worked very hard during my degree at Brunel University. However, it was a combination of this and what the University offered: Great teaching and learning facilities, 24/7 opening hours for the labs, and constantly improving infrastructure, excellent Placement and Careers Service, open door policy operated by all teaching staff, mentoring programme on which I was paired to work with a highly experienced engineer in the industry for over 6 months, having a dedicated lecturer who visited me and monitored my progress while I was in the industry.

Today, I’m very proud to talk about Brunel University in any discussion and I will recommend it to any prospective student looking to get the best out of their money spent at university. Brunel gives you all you need to succeed at the highest level in Engineering.

Recipient of the IET PRIZE, Amidou Ndakuna Fonso graduated in 2012 with a BEng in Electronic and Electrical Engineering.

Mitchell Howard was recruited by Mollart Engineering in March 2011 to head up new Research & Development projects at Mollart. Mitchell succeeded in winning two grants for developing deep hole machining technology and abrasive flow machining worth £350,000. He has continued to co-ordinate, manage and control the advancement of both projects involving an investment budget of £720,000 by the company.

These grant funded development projects involved Mitchell’s co-ordination of different universities and equipment suppliers.

Mitchell has proved himself to be a highly capable engineer and succeeded in delivering excellent results. This, coupled with his commercial acumen in securing considerable grant funding has won him the AMTRI Scholarship. This special Scholarship is supported by a trust fund created by AMTRI and administered by the Manufacturing Technology Association (MTA). The winner can use the AMTRI Scholarship to drive his or her continuous professional development programme, pursue postgraduate study or to enhance an education led project.

Mitchell is currently enrolled and sponsored by Mollart Engineering on the Engineering Doctorate (EngD) programme at Brunel University. Completion of the programme will enable him to apply for CEng status with the IMechE. He is a graduate of Brunel University’s MSc Advanced Manufacturing Systems (IMechE and IET accredited) programme.
I was fortunate enough to be placed on the Crown Sponsorship Scheme. Crown is a global metal manufacturing company with 155 plants in 52 different countries, who specialise in fast manufacturing. Which to put simply, they make all types of cans and metal packaging, but really fast, which makes a larger profit margin. They have strong links with the Mechanical Engineering Subject Area at Brunel University.

The placement was very different from other placements, because it is a rotation of the different Crown sites in the UK, and potentially the world. Each placement lasts three months, meaning the job description changes in each location, I worked in four locations: Wantage – Oxford, Poole – Dorset, Rugby – Warwickshire, and Braunstone – Leicestershire. In each location I worked on completely different projects and enhanced my skills in different areas.

There were large amounts of perks on the placement, including the subsidised canteens, and gyms and games rooms to use at break-times.

The scheme is a sponsorship and so Crown pay up to £24,000 (roughly calculated) over the three years you’re at university and on the placement, so the likelihood of not getting the job is slim. I was repeatedly informed by my managers at each location they would love to have me back.

To summarise the year, I have improved my skills and thanks to the rotating placement scheme I have increased my knowledge in many different areas. I have achieved a qualification in applied engineering, organised the design, order and delivery of products, improved my technical report writing and conversed with people across the globe. This year in the industry at Crown has provided me with skills that will prove invaluable in helping me to prepare for my final project and dissertation at Brunel.
Rishane Pereira, final year, Electrical and Electronic Engineering Student 2012/13

Placement Year 2011/2012
Company Name ARM
Job Title Industrial Placement
Salary Paid £16,000

My work placement was with ARM Ltd in Sheffield. ARM provides IP and integration tools to many EDA partners with regards to Processor and SOC designs. Although the majority of CPU’s and GPU’s are designed in Cambridge or Texas, the Sheffield office is responsible for designing interconnects and fabric that connects the CPU’s and GPU’s within the SOC.

During the first couple of weeks I spent at the company, my manager gave me the task of working on an extension of a year 2 university project I had undertaken. This allowed me to settle into the task ahead by building up on something already familiar to me. In the months that followed I was given many different tasks and soon I was doing the same job as any graduate engineer working within the company.

Working at ARM provided many extra benefits. There is a very generous stock option (which has been very useful in the last 5 years as ARM share prices have increased by 300%), use of the company gym as well as health insurance for the entire family. The project manager and my supervisor both said they would love to have me back and to contact them when looking for a job.

I would recommend applying for internship. An internship allows you to gain a head start into a career you’ve decided you want to go into, or will provide you with a better idea of your skills, and what you would enjoy in a job. However, whatever job you do, you will develop many transferable skills you can apply in your university degree or graduate job as well as beefing up your CV immensely.

Alina Williamson, final-year BEng Computer Systems Engineering Student, 2012/13

Placement Year 2011/2012
Company Name Accenture
Job Title Programmer
Salary Paid £17,000

I completed my placement year with a company called Accenture. I was based at a telecommunications client in Newbury for the year.

Because Accenture is such a large company with such a range of clients, working for Accenture means that you can gain experience in a variety of different roles with different technologies, and then are able to focus your career in the direction you wish to take. I was employed as an analyst within a team around managers of different levels within the company. My responsibilities began with producing a lot of status reports to give a view to management of how close we were to meeting our targeted deadlines, and any issues that we had been facing in delivering these. I was also responsible for gaining approval of our design and testing documentation from the client, and responding to any questions they had on this design. The role provided an opportunity to see how big projects are run in industry. As the year progressed, and my role developed I was given more responsibilities.

Overall I feel I have gained a significant amount from completing this placement – not only did it allow me to see how the techniques learnt at university are used within industry, but it also provided me with invaluable experience and a greater knowledge of what career I can gain from my degree. I have been offered a job back with Accenture once I have completed my final year, and I am really looking forward to going back and pursuing the career path that I began in my placement year.
Sophie O’Kelly graduated with a BSc in Product Design in 2012

I studied Product Design BSc, undertaking a year in industry to graduate in the summer of 2012. When it came to picking Brunel against my other choices, Brunel has a huge advantage as it is so close to London. As a designer, you need to constantly strive for new experiences and inspirations. Living on a campus university is fantastic for getting your head down in work, but when you need a break or want to do some design research, Brunel is a quick tube away from Central London and our world-renowned museums.

The course is fantastically inspiring! It really fuels people to pursue the field of product design they take an interest in. Brunel has the staff and facilities to cater for all of your interests within design, it’s just up to students to push themselves to take advantage of the unlimited opportunities available.

All of the lecturers are extremely supportive, and you feel they hugely respect you. Everyone is there to learn, and I always felt my opinion was listened to and respected by even the most senior of staff.

I can’t speak more highly of the Placement and Careers Service. For my industrial placement, I worked at the Walt Disney Company for 13 months as a Product Development Intern. I found the role through our Placement and Careers Service, who had received contact from Disney. I could write an essay on all the work I did, but in terms of after that year, the impact it has made has been invaluable. Working for six months specifically on infant products at Disney Baby, I gained a great understanding and interest in the infant product industry. This made a direct impact on my major final year project, and allowed me to skip so many steps in research and understanding as I already knew so much, without realising it. My final year project was in collaboration with the Speech Therapy team at Guys and St Thomas’ Hospital, designing a mouthing toy for infants. With my experience and knowledge of infant product market from Disney, it was a clear choice. I was able to use my commercial understanding, even when working on a medical product. The client was most impressed at how I turned the simple, medicalised idea, into a truly desirable, commercial product, which is being followed forward into further development, even after graduation.

My major project was in collaboration with the Speech Therapy team at Guys and St Thomas’ Hospital, designing a mouthing toy for infants. With my experience and knowledge of infant product market from Disney, it was a clear choice. I was able to use my commercial understanding, even when working on a medical product. The client was most impressed at how I turned the simple, medicalised idea, into a truly desirable, commercial product, which is being followed forward into further development, even after graduation.

Brunel and my time at Disney have completely shaped my future. Brunel opens your eyes to the world of design, and acts as an incredible launch pad to wherever you want to go. The atmosphere, the teaching, the other students, the incredibly hard work, and the fun you have, will completely shape you as a person and designer.

The skills you learn at Brunel, turns you into a professional and intelligent designer. You will understand the wider picture of product design, and how it affects a business and how it is produced and sold - refreshing for many employers to hear from a graduate.

To conclude, Brunel Design will truly challenge you, but at the same time, provide such support, respect, fun and inspiration, in a way I have never seen other students experience. Brunel has completely built me as a designer, I truly am Made in Brunel.
Muthukrishnan Kumarasamy graduated with an MSc in Advanced Engineering Design in 2011

There were a number of reasons I chose this MSc: the course content was an exciting combination of digital media disciplines - 3D modelling, interaction design, postproduction, and Brunel's reputable name was the initial attraction for me.

Brunel's media facilities are fantastic. They are well resourced with a vast amount of Mac workstations and powerful PCs, which are equipped with industry standard software and access to 4K cameras! The course requires you to think technically as well as creatively, this helps in problem solving and producing innovative and artistic content.

The teaching staff were excellent; I've learnt a great deal over the duration of the course.

My MSc dissertation was a collaborative project with ITN Productions. As I was already in part-time employment, the collaboration was a joint project rather than an industry placement. My dissertation was titled VFX & postproduction in Anti-knife crime advertising. I chose this research area simply because I wished to pursue a career in the VFX and postproduction industry. In addition to this, I wanted to produce something that I’m passionate about, which is using media as a tool for social change.

The MSc course has given me a wider expertise in advanced media technologies, which I believe will set me apart from the competition, and I would recommend this MSc course to those who want to be technically and creatively challenged. And also to those who have an interest in any of the following: 3D modelling, 3D stereo, postproduction, multimedia and video technology.

I’m currently employed as a Junior Digital Producer in Digital Production for INK (a global publishing company), whilst I continue to work on my personal film & VFX project.

James Blake graduated with an MSc in Advanced Multimedia Design and 3D Technologies in 2012

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Professor Kai Cheng, Head of Advanced Manufacturing and Enterprise Engineering, presenting the Alumni Prize

The course was intense and connected the essential points between academic theories and industrial real-time applications. Every theory session had an appropriate hands-on session to support and validate the theories. All the course materials are advanced and industry-oriented. We had access to CAD, CAM and analysis software and dedicated training sessions as well. Group projects, individual projects, assignments and programming exercises kept us engaged. I honestly never had time to breathe. Guest lectures and surprise interactive sessions left us spellbound. We had access to rapid prototyping, cam machining and lots more. Simply the best!

I must say that the staff were very helpful and experienced. The professors, other lecturers, supervisors and technicians helped us to achieve what we came here for. The course director was a man of miracles. His vision, support and guidance took us to great heights. He will be remembered for the rest of my life.

I did an industrial project with Subsea ONG Company and built a test rig for offshore splash zone installations. It was a wonderful experience and I learnt numerous concepts through this project. It was a combination of mechanical design, electrical connections, microprocessor programming and instrumentation. I was given the opportunity to work with specialized Orcaflex software. I built a steward platform with other requirements and testing equipment. It was very useful for my career and personal aspirations. The project helps me in my current job as well.

My final year dissertation was with Jones and Shipman Company based in Leicester. I performed a massive FEA on huge grinding machines and created a customized program for performing a multistage analysis on the machines through Abaqus. The program was written in Python and was an instant hit in the industry. My results were implemented and my paper was selected for Simulia International Conference. This project helped me to achieve an A* with distinction. My dissertation also received a Brunel Alumni prize for best dissertation award.

I got a job as a Design Engineer in a ground breaking power storage company and I am working in a core design team of the company developing new solutions. My Master's degree sowed the seeds of engineering so deep that I am continuing my researches in computational methods and its applications.

In summarising my time at Brunel, “To experience the best of engineering at a University named after the famous engineer, Isambard Kingdom Brunel, Brunel is priceless!!”
The prize, which is open to all Brunel doctoral students researching in the field of Human Centred Design, was claimed by Christopher McGinley who is currently completing a PhD in Design at the University.

Mr McGinley’s winning submission, titled “Supporting People-Centred Design Through Information and Empathy”, investigates existing practices of designers within contemporary design studios and explores the ways in which they come to understand the people that they design for, and the role of ‘human information’ in informing product design.

As part of his research, Mr McGinley developed a unique resource framework called ‘Means of Human Information Representation, Retrieval, Organisations and Reflection’ (MHIRROR) which was realised as a working online prototype. MHIRROR enables designers to represent the perspectives of six diverse groups - an athletic user, a visually impaired user, a pregnant user, an elderly user, a mobility challenged user, and a user with a busy lifestyle - in the design process. This has been applied in the development of two user-centred design artefacts by external design agencies - a novel pint glass redesign for the Home Office, and a commode redesign for the Department of Health.

Professor Joseph Giacomin, Director of the Human Centred Design Institute at Brunel University, said: “Christopher’s entry was judged by the prize jury to be the submission of the highest professional quality and to have the greatest impact on the Human Centred Design profession. The core framework based on information and empathy, and the novel approaches adopted for enmeshing the framework within the design process, were considered to be an outstanding example of 21st century thinking. We were particularly impressed by the manner in which communication, empathy and human empowerment permeated the framework. We look forward to supporting Christopher in his endeavours to promote the application of his framework within the design community and beyond. We also thank all the other entrants to the Research Prize.”

Professor Giacomin also thanked Peter Ilori, founder of Octagon Orthodontics, a national network of specialists in orthodontics, health and wellbeing, for his donation. “Peter is a champion of the idea that business success in the 21st century is achieved through design for people, rather than simply through technological evolution,” he said. “This idea is shared by the University team at the Institute. It is thus our ethos, ethics and business model to support tomorrow’s designers by providing the tools needed to enhance human wellbeing and empower people. We are grateful for Peter’s support, and our PhD students can look to him as a great example of what can be achieved through Human Centred Design.”
Why do we need an aquatic robot?

‘Underwater environments can be hazardous for human divers. A robot that can operate underwater will be able to work on undersea pipelines, oil rigs and ships’ hulls. It could even do search-and-rescue operations, like retrieving black boxes from crashed aircraft.’

Why an Octopus?

‘Evolution has thrown up some really neat ideas. We can take those ideas from biology and use them in new technologies. The octopus is amazing. It can squeeze through holes barely bigger than its brain. And with its eight arms it can walk, swim and grasp objects.’ Note: Biomimetics is the science of looking at nature for novel mechanisms for solving physical problems.

What is your role?

‘With colleagues from the University of Reading, I helped to develop a tough waterproof skin, with pressure sensors and suckers. Real octopus skin is tough, yet stretchy. So we looked for artificial materials with similar properties. By using something as stretchy as possible, the artificial muscles don’t have to work too hard to extend the arm.’

What about the suckers?

‘Octopus suckers are complicated – they use lots of muscles and energy. But squid suckers stick to objects almost entirely passively. I found this out when I was preparing squid to eat at home, and the suckers stuck to my sink! So we made prototype squid suckers, which don’t require any power to work.’

What are others working on?

‘Our partners in Pisa made artificial muscle, so that the octopus arms can stretch. They use very fine metal springs, made of a material called a shape memory alloy. When you pass an electric current through this alloy, it changes shape.’

What are the challenges?

‘We need to coordinate the finished robot’s eight arms to perform a variety of functions. Also, at the moment we have to use a cable to power and control the octopus, which limits how far the robot can go. We need to make it work remotely without a cable.’
Professor Hua Zhao’S election to SAE Fellowship

Professor Hua Zhao, Head of Mechanical Engineering, has been elected an SAE fellow. SAE (Society of Automotive Engineers) International is a US based global association that serves more than 129,000 engineers and related technical experts from the aerospace, automotive and commercial-vehicle industries.

According to SAE, “SAE Fellow status is one of the highest grades of membership bestowed by SAE International. It recognises outstanding engineering and scientific accomplishments by an individual that have resulted in meaningful advances in automotive, aerospace and commercial-vehicle technology. The program, established in 1975, recognises an average of 20 worldwide recipients for this prestigious grade each year.” Only about six academic staff and engineers in UK have achieved such recognition over the last 30 years. Professor Zhao was formally recognised during the SAE 2012 World Congress and Exhibition in Detroit, U.S.A., on 24th April 2012.

Brunel Vice-Principal, Professor Mansoor Sahadi, stated: “This is great news for you and for the School. My sincere congratulations to you for this achievement, and for putting Brunel Engineering on the international map. Very well done indeed.”

Dr Katherine Cashell, new lecturer in Civil Engineering

Dr Katherine Cashell joined the Civil Engineering Subject Area at Brunel in September 2012, as a full-time lecturer. Katherine is a chartered engineer and is a full member of the Institution of Civil Engineers and Engineers Ireland as well as the Institution of Structural Engineers. She is the current Chairperson of the GB region of Engineers Ireland.

To date, Katherine has published seven papers in leading journals as well as many other conference papers. She has also written one book chapter and has refereed papers for many journals. Her research background is mainly in the area of extreme loading, but also covers many of the major aspects of structural engineering, such as reinforced concrete structures, steel structures and composite construction, in addition to looking at newer materials such as stainless steel. Katherine is very interested in developing more efficient methods of design, as part of an overall improvement in carbon emissions in the construction sector.

Prior to undertaking the PhD, Katherine completed a MEngSc (Research) at University College Dublin (UCD) in Ireland. The primary aim for this project was to develop a new and efficient method of assessing the structural profile of a road surface using vibration measurements taken from vehicles. Accordingly, a detailed knowledge of in-situ data acquisition equipment, dynamic analysis and signal processing was essential.

Katherine completed her PhD in Structural Engineering at Imperial College in 2009. The research involved a detailed investigation into the performance of composite and reinforced concrete slabs under extreme loading conditions, focusing on the failure condition associated with fracture of the reinforcement. In addition to the analytical and numerical aspects of the project, a primary focus was to conduct an extensive number of large-scale experiments.

Prior to joining the SCI in 2010, Katherine spent a period working in industry and held the position of Structural Engineer at High-Point Rendel (HPR) Ltd. This role included working on structural design projects as well as being involved in construction management. Although relatively brief, her time at HPR provided excellent exposure to real structural engineering applications and gave her perspective on the core knowledge required of structural engineers in the workplace.

Katherine is very excited to have joined the ever-growing and dynamic Civil Engineering Subject Area at Brunel. Attracted by its reputation as well as the engaging and ambitious staff, she looks forward to the opportunities and challenges ahead. As a passionate civil engineer, she is enthusiastic about imparting her knowledge to the civil engineers of the future and ensuring that Brunel civil engineering graduates maintain their excellent reputation in the jobs market. A primary aim is to contribute to the successful research that is already being done in the Subject Area through collaborative and individual research projects.
New Book
ICE Manual of Structural Design: Buildings
Professor John W. Bull
Head of Civil Engineering

Book Summary
Published October 2012
ICE manual of structural design: buildings is the definitive reference for practising civil and structural engineers involved in the design of buildings.

Written and edited by recognised experts from industry and academia, the manual delivers best practice knowledge and practical guidance, covering all key aspects of building design in a single volume. The manual takes a practical, three-part approach to the structural design process – addressing fundamental principles, concept design and detailed design – highlighting essential calculations and techniques.

Key features:
• Accessible, practical solutions to common design issues
• Richly illustrated, allowing clear visual representation of complex principles, calculations and techniques
• Case studies and examples, illustrating practical application of theoretical principles
• Extensively referenced, providing a wide variety of further resources for detailed information.

Part of the ICE manuals series, ICE manual of structural design: buildings is an invaluable resource for all practising engineers seeking best practice guidance in the structural design of buildings, regardless of their speciality or individual contribution to building projects.

New Book
Laser Diagnostics and Optical Measurement Techniques in Internal Combustion Engines
Professor Hua Zhao
Head of Mechanical Engineering

Book Summary
Published September 2012
The increasing concern about CO₂ emissions and energy prices has led to new CO₂ emission and fuel economy legislation being introduced in world regions served by the automotive industry. In response, automotive manufacturers and Tier-1 suppliers are developing a new generation of internal combustion engines with ultra-low emissions and high fuel efficiency.

This book focuses on laser-based optical techniques for combustion flows and in-cylinder measurements. Intended for new and experienced engineers, researchers, academics and students, this book provides an introduction to experimental techniques that are best suited for in-cylinder engine combustion measurements. In addition to the fundamentals and theories, this book provides practical guidance on the application of such techniques through case studies performed at the author’s laboratory at Brunel University.
MSc team in top three at Formula Student competition 2012

The Automotive and Motorsport MSc team competed in the Class 2 division at Silverstone and came 3rd overall out of 22 (including 1st in the ‘cost’ category).

New courses fully approved for 2013 entry

- Advanced Electronic and Electrical Engineering MSc
- Digital Design and Branding MSc
- Embedded Systems Multimedia Communications MSc
- Embedded Systems Signal Processing MSc
- Project and Infrastructure Management MSc
- Renewable Energy Engineering MSc

New courses subject to final approval for 2013 entry

- Structural Integrity MSc

Calendar of School events

23 May 2013
BE Brunel Engineers showcase

13 – 16 June 2013
Made in Brunel graduate show

24 – 26 June 2013
ResCon 13
(annual research student conference)

15 – 19 July 2013
Headstart

For information on all courses and previous Spotlight newsletter issues, see: www.brunel.ac.uk/sed
Further comments, suggestions and future submissions to: Tom Kissack, Marketing and Recruitment Manager, School of Engineering and Design, Brunel University, Uxbridge, Middlesex, UB8 3PH, UK
Tel: +44 (0)1895 266634    Email: thomas.kissack@brunel.ac.uk