Brunel Students Win Prize for Presentation at Merlin’s Aircraft Design and Handling Competition 2005

Brunel Mechanical Engineering students, (pictured from left to right: Saima Anwar, Claire O’Reilly, Ed Arran and Phil Alexander-Pye) have won the prize for presentation at this year’s Merlin Aircraft Design and Handling Competition held at UWE on 7 June.

This annual event is organised by Merlin Flight Simulation Group, manufacturer and market leader of the world’s most advanced Engineering Flight Simulators for use in Aeronautical Universities. The competition is open to student project groups from universities throughout the UK and is aimed at promoting student interest in aircraft engineering and design. This year eight universities entered the event, and the standard of the entries was both very high and very diverse in terms of aircraft design.

Each team is required to put on a poster presentation of their project and to subject their aircraft design to a simulated test-flight on a Merlin simulator “flown” by John Farley, a retired Harrier Test Pilot. In the test-flight, John Farley was highly complementary about the aerobatic performance of the design, and got quite carried away doing loops and rolls of such violence that it almost induced a feeling of air-sickness in members of the audience.

Part of the prize for the Brunel team is a ride in the only Lancaster bomber still flying in the UK.

INTERNET ENGINEERING STUDENT WINS SHELL STEP AWARD FOR "Most Enterprising Student" in London

Bhavesh Desai won the Shell STEP Award 2005 for ‘Most Enterprising Student’ in London at a ceremony in Shell Centre, London, in September. Twenty one year-old Bhavesh, from Greenwich (pictured right, with Shell’s Andrew Eddy), scooped the award for his work at Mafkildea (wood4floors), a solid wood floor supplier based in Forest Hill.

The small business chose Bhavesh, currently studying Internet Engineering at Brunel University, to undertake an eight-week summer project designing, building, and implementing an entirely new administration system for the company, which it estimates will save them up to £16,000 a year.

Andrew Eddy, Director, Shell London Office, who presented the award said: “At Shell we are proud to be supporting young people across London, and through STEP, helping them to prepare for the first rung on the career ladder. Making the jump from student to full-time work can be challenging and daunting. The experience and skills that Bhavesh and all the London finalists have gained over the summer will hopefully make landing, and starting, that first full-time job much easier for them.”

Bhavesh will now go on to represent the capital at the Shell STEP national final to find the UK’s ‘Most Enterprising Student’ in October in London.
Brunel's Combustion Engines Research Group will help develop the world's first car engine capable of automatic switching between two and four stroke operations. The new engine will offer up to 30% benefit in fuel consumption and reduced CO2 emissions as well as class leading performance and drivability.

Using innovative design of combustion systems combined with advanced valve train and control technologies, the prototype engine will be tested extensively on the recently installed 250kW dynamic engine test facility in the School of Engineering and Design, and will be available by 2007. It will initially be developed for premium cars, with longer-term plans in place to develop it for mid-sized family cars. In addition to the cost and environmental benefits, the engine also offers:

- The potential for aggressive engine downsizing – using a smaller, lighter engine operating at higher specific load;
- Compliance with Euro 4 emissions standards and with the potential to adapt to meet future standards as applied to conventional gasoline engines;
- Highly attractive driving characteristics, with class-leading torque delivery.

Prof Hua Zhao, pictured above, Head of the Brunel Group, said, “It's fantastic to be involved in creating a world first. The switchable two/four stroke engine will change the future of car engines in terms of cost, drivability and impact on the environment.”

Brunel University is the lead academic institution for an EPSRC project of total value £1.02M awarded in June 2005 to a consortium consisting of Brunel, Queen Mary, Edinburgh, Heriot-Watt and Nottingham Universities to study flow boiling and condensation in microchannels. The project objectives include: (i) a study of two-phase flow patterns and heat transfer in single and multiphase flow in microchannels (ii) the development of models and simulations for flow boiling and condensation and the investigation of several heat transfer enhancement methods (iii) the development of design methods for mini-micro heat exchangers together with an appraisal for applications for which particular methods of enhancement are appropriate and (iv) the development of prototype thermal control packages such as that required to cool an integrated circuit chip.

This work will place the United Kingdom at the forefront of research and development of micro thermal systems for a variety of applications including the process and refrigeration industries and computers and microelectronic devices.

Prof Tassos G. Karayiannis, School of Engineering and Design (pictured above) and Prof David Kenning (visiting professor) are Brunel investigators of the project.

I graduated with a BA (Hons) in Architecture from Greenwich University and really felt that I wanted to expand my knowledge beyond Architecture and into the world of design and management. The MA Design and Branding Strategy course at Brunel was what I had been looking for.

I have really enjoyed my experience at Brunel, as it has proved a supportive and friendly environment, where the tutors are encouraging and take a real interest in my academic and personal achievements.

I am currently writing up my dissertation, which is about developing a design strategy that will help the elderly and the cognitively impaired to find their way round train stations more easily. My research has enabled me to interview industry professionals, including the managers at Transport for London, who have the ability to implement this strategy. I am pleased to say that through my research and experiences at Brunel University, I have recently been offered a job at Transport for London, as a graduate project manager, which I start as soon as I complete the course this year.

Another great opportunity at Brunel was presented to me, when I had the chance to exhibit my research poster at a major international conference held at the university. This is something I would not have been able to do without the confidence and knowledge I gained at Brunel through the research modules and the encouragement of my tutors. Overall, the experience at Brunel is one that I will never forget; moreover the course has given me a great advantage in the real world of work.

Mashooda Chikalila (pictured above) is a current MA Design and Branding Strategy student.
Gillian Swan, graduated in June 2005 with a BSc in Industrial Design. Her project was a unique insole for children's shoes that records the amount of exercise a child does during the day and converts it to television watching time. The project called "Square-eyes" means that the more a child exercises the more television viewing time they ran. The insole contains two buttons. The first records the number of steps taken to the base station using a radio signal. The base station, which is connected to the television, then calculates the TV time the child has earned and displays it on the station's LCD screen. Once their earned television time runs out, the TV automatically switches itself off and is disabled until more exercise time is earned. Commenting on her project Gillian said, "Today's children are exposed to a raft of television programmes and children's channels. Ten years ago children were entertained by playing games with their friends, now they are cooped up in their bedrooms watching hours of TV programmes. "Square-eyes" will help children include exercise in their daily routines from an early age."

Paul Turnock, Design Director at Brunel's School of Engineering and Design said, "This project is an excellent example of realising a concept and creating a wholly feasible future project."
Amir Mostofi, Multimedia Technology and Design graduate 2004

I studied in Kingston-Upon-Thames until A-levels and, in 2001, I began the Multimedia Technology & Design course at Brunel University. The facilities at Brunel were far more advanced and the Department seemed better equipped than other universities I visited.

My Brunel experience ended in July 2005 when I graduated, but the experience was very memorable for many different reasons. I used the first year to really find my feet and explore the course and have fun. The second year and indeed the final were more about self-organized learning and using the tools lecturers provided to go away and learn on your own. My final year project was very enjoyable and I found it greatly challenging and rewarding.

Most of the lecturers on the course are very skilled and guide the students towards where they need to be, but it is definitely up to the student themselves to work and commit to achieving results. After finishing my dissertation and graduating, I decided with fellow MMTD student Ben Bostock to start our own design company Static Pop Studios delivering bespoke web, print, and textile design. I had an article about my final year project published in Computer Arts magazine where they named me top of the class. My ultimate goal is to work at a 3D studio such as Studio AKA, Blur Studios or Pixar.

My project was titled ‘Juniper – The Last Robot’ and was an exploration into the capabilities of 3D and to a lesser extent composing music. I decided before the final year to focus on animation and spent weeks studying flash and 2D animation. But then I decided to make a 3D movie. I had never done anything in 3D but just thought I had to give it a go. It turned out pretty well in the end and the movie lasted nearly 8 minutes and was accompanied by an original orchestral soundtrack I produced using FL Studio and Sonar. The story of the movie evolved around the fictitious ideas of a young boy whose imagination saw his toys and room come to life in a dark and peculiar world. I recommend 3D to any students looking for a final year project, but it does take a lot of work. 3D is an exciting field and possibly one of the simplest ways of winning a reaction from your audience.

The recently opened e2v centre for electronic imaging, part of the Imaging for Space and Terrestrial Applications group within the School of Engineering and Design, has been involved with characterising a large number of imaging detectors for the European Space Agency’s Gaia mission. Gaia is an ESA cornerstone mission due for launch in 2011 to start its 6-year mission to accurately map the positions of a billion stars in our galaxy. The spacecraft contains two main optical instruments comprised of large arrays of charge coupled device (CCD) imaging detectors.

The group at Brunel, led by Prof Andrew Holland, has been involved in the radiation testing and modelling of novel CCD technology for application in the devices of the planned Radial Velocity Spectrometer (RVS) instrument on board Gaia. The devices, manufactured by e2v technologies, feature low-light-level L3VisionTM technology that allows a large gain in signal to noise to be made, greatly improving the amount of spectral information that can be obtained from the observed stars.

One hundred L3VisionTM devices were recently provided by e2v technologies for a proton irradiation study to discover if they would be able to survive the radiation environment expected during the lifetime of the Gaia spacecraft. All devices were found to be fully operational after the experiment which irradiated the devices to ~5 times the expected dose. The novel L3VisionTM technology has been proven to be very reliable and will be a valuable addition to the CCDs of the RVS and other space missions proposed in the future.

Further information about Gaia and the many other imaging projects the group is involved in can be found on the group’s web pages:

http://www.brunel.ac.uk/cei
http://www.brunel.ac.uk/about/acad/sed/sedres/si/ista/
Multimedia Technology and Design student wins 3D Animation Award

I studied BSc Multimedia Technology and Design following my A-levels. I have genuinely enjoyed the Multimedia course – the syllabus itself offers a range of exciting new media technologies. I have had the opportunity to build interactive websites, create 3D animations and shoot videos. I have always found the support and teaching environment quite a refreshing place to study.

I feel the sandwich course has been very beneficial to me. I was able to get an industrial placement at Amazon.co.uk as a junior designer. My aim is ultimately to work in the creative industry. I have thoroughly enjoyed developing and building my 3D animation and would love to be involved in the creative 3D industry. I don't feel my education is over; I think my real education is just beginning.

I have enjoyed some great feedback for my Multimedia Technology and Design final year project. The project was based on an exploration of ‘Character Culture in Japan’. The Japanese embrace cute characters in all walks of life, so much that they have become a real culture rooted in the Japanese heart. I travelled to Japan for nine days between late November and early December to get first hand impression. During my trip I became fascinated by Japanese culture, from the scenic pleasures of Kyoto and its temples to the ultra modern districts in Tokyo packed full of gigantic department stores and trendy teenagers adorning the latest fashion trends. During this short trip I tried to absorb as much as I could and my project thus developed more into a personal exploration of Japanese culture. I created a 3D animation with the aim of presenting my personal understanding and appreciation of Japan, its history, art and design, beliefs and so on. With the footage I had taken during my trip, I also made a short documentary montage which was inspired by work I had studied in the Image in Motion module; the acclaimed ‘Sans Soleil’ film by Chris Marker. My animation ‘a dream of long ago’ was featured in Computer Arts graduate showcase receiving an excellence award and it will also be showing at an animation festival in Berlin hosted by Pictoplasma, whose books first sparked my passion for character design. The whole project and animation can be viewed at www.myjapan.co.uk

Latest satellite technology to help monitor large bridges

University experts have studied one of Britain’s most prominent landmarks in a bid to discover how the latest satellite technology could make bridges last longer and remain safe for motorists, pedestrians and cyclists. The team from The University of Nottingham and Brunel University spent 48 hours on the Forth Road Bridge, which links the Lothians to Fife in Scotland, to find out how the bridge’s movements were affected by both heavy traffic and other environmental factors like the wind. Their findings could enable engineers to assess whether bridges that were built decades ago are still safe to be used by traffic and if they need to be modified to prolong their lifespan.

The structure of a bridge is designed to move fractionally when a load, such as the weight of traffic or a gust of wind, is applied. Over the last few decades traffic on Britain’s roads has increased dramatically, putting a strain on bridges that were never designed to cope with such heavy loads. This loading increase could cause bridges to move significantly more, which could have potentially serious consequences for the safety of the structure.

The collaborative project is aimed at giving the Forth Estuary Transport Authority, which maintains the Forth Road Bridge, a clearer picture of how the bridge is coping with these increased loads by accurately measuring how much it is moving by using small GPS receivers. The techniques and technology are capable of measuring the 3-D positions of the GPS antennas to an accuracy of a few millimetres and at a rate of 10 hertz.

A network of seven receivers were placed at specific points on the bridge, along with two off-bridge reference receivers, relative to which the bridge receivers were positioned. Using satellite signals, the academics were able to continually plot the position of the receivers, which allowed them to build up a detailed picture of how the bridge was moving. Dr Chris Brown, lecturer in the Mechanical Engineering subject area, said: “The GPS network on the bridge has enabled us to obtain really good quality data over prolonged periods. Working in collaboration with consulting engineers at WA Fairhurst and Partners in Glasgow, we have already been able to establish from their estimate of the performance of the structure and our measurements that the bridge is moving roughly in line with expectations. We will now also be able to carry out more detailed calculations to show how wind and other environmental factors affect the behaviour of this particular bridge.”
MEng Mechanical Engineering project succeeds in BMFA, BAE Systems University Heavy Lift Challenge

Brunel students (Syoginus Aloysius, Ben Jones, Charlie Jones and Melissa Saldanha), as an MEng Mechanical Engineering project, designed an electric powered model aircraft and participated in the British Model Flying Association, BAE Systems University Heavy Lift Challenge competition held in June 2005 at Elvington Airfield, York. The electric powered model aircraft category was introduced for the first time this year by the BMFA, BAE. The IC engine powered competitions have taken place for 12 years. The students, also the first Brunel students to participate in the competition, came second out of four participants.

The electric competition involved (i) filling a plastic bottle of water (as payload) from a bucket of water at some distance away from the launch point, (ii) inserting the bottle in the aircraft, (iii) hand launch the aircraft, (iv) flying the aircraft in a circuit (by a qualified pilot) and making an additional 360 deg turn and then land, (v) take the bottle off and empty it in another bucket some distance away from the first bucket, (vi) refill it again from the first bucket and so on. They had 10 minutes to do as many repeats as they could fit in.

They had two rounds. In the first round, the aircraft performed well and did one cycle, but run into problems with the battery and they had to stop, sort out the battery and wait for the next round. In the second round they managed to repeat the cycle 4 times, almost 5 times.

Saima Anwar graduated in June 2005 with an MEng in Mechanical Engineering with Aeronautics

“I chose to study at Brunel as it had an excellent reputation for the engineering courses. The sandwich course gave me the opportunity to spend a year in industry where I gained an insight into what engineering jobs may be of interest to me in the future.

The teaching and support received by the lecturers and admin staff has been amazing. I have always maintained close relationships with staff and find most of them easily approachable as well as more than willing to help.

My final year mainly consisted of group assignments where team-working skills were essential.

As part of my final year project, I worked in a team of 4 students. We had to design and construct a canard-configured aircraft. This was a very challenging and innovative project which gave me the opportunity to learn a number of skills. The practical work involved was substantial and most enjoyable. We took part in a competition which involved inputting the aircraft's specification and characteristics onto a simulator and then flown. The competition also involved displaying essential dimensions and characteristics of the aircraft on a display stand. The group won a prize for the best presentation.

My future plans are to either train as a commercial airline pilot or become an aeronautical engineer, but we will see!! The fact that I've got an engineering degree opens doors to a wide range of careers.”

Mr Ives, 62, graduated from Brunel University with a first class honours degree in Electrical and Electronic Engineering nearly 40 years ago. Now a leading professional engineer, he was elected President of IMechE, the UK’s qualifying body for mechanical engineers, earlier this year.

He visited Brunel University on September 15 to open a new cutting-edge design studio for students of the new Engineering Design MSc course launched this year. “Brunel is one of this country’s most respected academic homes for engineering, as the Institution of Mechanical Engineers is for professional mechanical engineers,” said Mr Ives. “This is my first return to the site where I studied, and, as one of Brunel’s first graduates and the first engineering president that the University has produced, I am delighted to be involved in the launch of the new engineering MSc course.”

The new laboratory has been fully equipped by Niftylift, which produces world-class hydraulic aerial work platforms (known as “cherry pickers”) and was established 25 years ago by another Brunel engineering graduate, Roger Bowden, who graduated with a Batchelor of Technology in Mechanical Engineering / Production Technology in 1971. Mr Bowden, founder and chairman of Niftylift which now employs 100 staff added: “We see the new course as being a very valuable step forward for the development of the engineering graduate into a competent and professional Design Engineer.”

Pictured from left to right: Mr Bowden, Dr Sivaloganathan, Prof Schwartz (Vice-Chancellor), Mrs Ives, Prof Ives (President of IMechE), and Prof Tassou (Head of School of Engineering and Design).
MSc STUDENTS WIN FORMULA STUDENT AWARD

Article by Albert Lau, current student on the new MSc Automotive and Motorsport Engineering course

Meeting for the first time at the end of September last year and tasked with the design and construction of a Formula Student car, the 14 MSc Automotive and Motorsport Engineering students established Brunel Masters Motorsports (BM2). As the name suggests, Formula Student is a competition between universities from all over the world. During a one-year period, teams design, build, and race a single-seater racecar.

The MSc group decided that the team should enter their car, BMM-01, as a Class 2 vehicle. Entering Class 2 involves design and manufacture of a chassis as well as competing in all of the static events, while Class 1 includes the above as well as dynamic events. Without the added time constraints of entering a fully running car, a chassis could be manufactured with a build quality that is unmatched. At the competition, BMM-01 was by far the most complete Class 2 vehicle. In fact, it was the only car in its class that had suspension and steering components fitted to the chassis.

The team did extremely well. Judges even commented on the fact that had the business presentation been in Class 1, it would have finished in the top 5. The team finished second in the design judging to a very well prepared team from Portugal. Despite a very close finish, BM2 emerged as the overall Class 2 winner. (Team members pictured with Ross Brawn, Technical Director of Ferrari Formula One.)

Jon Barnes, graduate in MA Design & Branding Strategy

“Prior to joining the MA Design & Branding Strategy I studied for a BA in Industrial Design & Technology at Loughborough University, followed by a year as a freelance web designer. My first degree gave me a very useful and broad range of practical design skills, but I was always more interested in the business side of design and the management of the creative process than using my practical design skills on a daily basis. After a year freelancing as a web designer, I developed a keen interest in brand strategy, but felt I needed further professional development if I was to progress in that direction. The MA course seemed to match my ambition, skills and interests perfectly – giving me both the robust academic structure to quickly develop my knowledge of design management and branding theory, and the freedom to explore and refine my own practical capabilities and interests within the field. Brunel was the obvious choice as it is very well known and respected in the design world, and the department boasted fantastic contacts with leading industry figures. It was essential that I found a course that would help me take my research out into the ‘real world’ and allow me to begin to establish myself in what is a very competitive industry.

Studying for a postgraduate degree at Brunel was very rewarding and I particularly benefited from the international flavour of the course. I believe we had about a dozen different countries represented in our year, which provided valuable global insight into design and branding issues. The course itself provided the development I was looking for and access to a wealth of experience through the professionally practising tutors. I was able to really get my teeth into the subjects I was most interested in and make initial industry contacts I established via the tutors opened up an entire network of people whom I came to depend on for invaluable information for my research.

The course has given me the focus and confidence I need to continue to pursue my interest in managing design as a total business resource. I now have a solid grounding in branding theory and design management, the ability to articulate my ideas to people from a wide variety of backgrounds, a holistic approach to problem solving, the experience of networking with people within the industry, and an even better idea of how I want my career to progress. My research project has opened up a world of superb industry contacts and has even led to the publication of an article based on my research in an industry magazine, which has been invaluable exposure.

After graduating, I spent some time giving presentations to the companies who had helped me during my research. I was soon offered a job as an Account Executive at Ogilvy, a large global communications group that specialises in 360-degree brand communication strategies.

The essence of my research project was to examine whether there was a design and branding opportunity for airlines to take advantage of the current interest in passenger health (and the lucrative wellbeing trend), in order to build stronger relationships between the customer and the brand, and establish a unique competitive position. The project involved liaising with a large number of industry specialists to understand the challenges of airline branding and the issues concerning the wellbeing of airline passengers, as well as surveys and focus groups with passengers themselves. The dissertation offered a framework for the development of a wellbeing brand experience, using customer-journey storytelling to suggest design innovations that might address the physical, emotional and psychological needs of passengers to the benefit of the brand.”
Staff publishes new book:
The Grid: Core Technologies

Dr Maozhen Li from the Electronic and Computer Engineering subject area has co-written a textbook entitled The Grid: Core Technologies, which has recently been released by John Wiley and Sons.

Coined from electricity power grid, the Grid focuses on sharing various resources on the Internet. It aims to provide a secure, inexpensive, seamless and transparent computing environment for solving data and computationally intensive problems. In the book Dr Li presents a clear, systematic, and practical description of the technologies that enable the Grid.

Targeted at researchers and postgraduate students in computing and engineering departments, IT professionals, and Grid end-users, the book describes the middleware components that make up the Grid step by step. It also gives hands-on advice on designing and building a Grid environment and writing applications.

Review of School of Engineering and Design industry-academia event on Communications and Networking

Article by Dr Tatiana Kalganova, Electronic and Computer Engineering

The “Communications and Network” event was held on May 12. It was the 2nd from the series of academia-industry networking events organised by the School of Engineering and Design at Brunel University and London Technology Network (LTN) business fellows. Business Fellows are trained and supported by LTN to both map the industrially relevant technologies within the School, and to optimise the interactions between the School and industry. The event attracted R&D experts from Brunel University, Inertial Guidance Technologies, BAE Systems, Caterpillar, Beeb. The participants had a unique opportunity to learn more about our latest technologies and products in Communications and Networks. The speakers presented the key developments and research projects carried out in the School in areas of 3D Multimedia Information Systems, Pedestrian Navigation System and Low-bit video communication. The real-time and video-based short presentations prepared by researchers demonstrated the strength of developed technologies.

There was a successful networking session with new introductions and prospective future collaborations. A number of posters were established in BITlab by researchers and PhD students who exhibited the latest product development, including proof-of-concept demonstrator that co-operates digital terrestrial broadcast (DVB-T) and mobile cellular networks (GSM/GPRS/UMTS), 3D Multimedia Information System, Modelling of Photonic and Microwave Devices, The Mobile System for Remote Sighted Guidance of Blind and Visually Disabled Pedestrians, Ambulance 3G, MedLAN, Low Bit-Rate Video Communication, Efficient Video Processing and new technologies, including GRID, Accurate Indoor Positioning Technologies, simulation of wireless communication systems and others.

The event received positive feedback from both academia and industrial participants. Dr Faustin Ondore from QinetiQ advised that he found the presented technologies very relevant to his company and expressed interest in attending other Brunel networking events. Several researchers commented that the networking event gave an excellent opportunity to learn about the developments and achievements of their colleagues across the School. The research portfolio, prepared prior to the event and now available upon request from the Research Office, School of Engineering and Design, included a description of the presentations, posters, projects, etc., carried out in the Communications and Network area, as well as successful case studies of industry-academia collaboration.

Why Choose the School and Brunel University

- Teaching, support and facilities rated “excellent”
- Flexible modes of study
- Brunel graduates are highly valued by UK and international companies
- Close links with industry
- All full-time freshmen receive on-campus accommodation
- “Best University in London for Sport” – The Sunday Times
- National UK League Tables: In The Guardian National League tables in April 2005 Brunel General Engineering was placed 3rd out of 122 UK Universities, Design 8th and Mechanical Engineering 11th. In The Times National League tables in May 2005 Design was placed 2nd.
- Excellent transport links to London Heathrow and the Capital

For information on all our courses please see: http://www.brunel.ac.uk/about/acad/sed/sedcourse/

Further comments, suggestions and future submissions:
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Calendar of Events

- LTM Industry Academia Networking event (Theme Energy and the Environment) March 2006
- School of Engineering and Design Show (Business Design Centre, Islington) 4 - 7 June 2006
- First International Conference on Advances in Bridge Engineering 26 - 28 June 2006
- Brunel/Surrey Engineering Doctorate Conference 4 - 7 September 2006

New Courses (Sept 2006)

- BEng / MEng Aviation Engineering
- BEng / MEng Aviation Engineering with Pilot Studies
- BEng / MEng Space Engineering (Subject to Approval)
- MSc Aerospace Engineering (Subject to Approval)
- MSc Building Services Engineering with Sustainable Technologies (Subject to Approval)
- MSc Sustainable Electrical Power