ECE in 2008 - Achievements and Plans

2008 was a particularly successful year for ECE. The subject area continued its progress with NSS scores in both the 'Art and Design' and 'Electronic Engineering' sectors of the survey. The Multimedia programmes continued to generate nationally-leading student satisfaction scores, and Electronic Engineering managed to achieve an increase of over 0.5 in the overall score, from 3.6 in 2006 to 4.112 in 2008, a result that stems from our commitment and dedication to students' satisfaction with our teaching practices, student support and learning processes. Our student intake has also increased (190 UG and 170 PG), making it the best ECE recruitment figure since the start of the school in 2004. The volume of the intake was associated with improved intake quality, making 2008 the first year our admissions did not have to go through the clearing process to achieve our preset recruitment targets. ECE is now a department of over 900 students, which is 1/3rd of the student population in the whole school. In 2008, ECE developed 7 MEng programmes, 4 of which correspond to existing BEng programmes. Another prominent achievement was the completion of all preparations for the IET Accreditation visit for both our UG and PG programmes. While we are still waiting for the final decision from the IET accreditation committee, the visiting panel commended several aspects of our practices and teaching/learning processes and will make recommendations to the committee for accreditation of all our submitted BEng programmes (5 years) as well as our currently running MSc programmes (2 years). MSc SEP was recommended for 4-years accreditation starting 2006 intake.

This year was also particularly remarkable as the department embarked on a new and well-balanced research structure, reflecting the areas of strength and expertise in the subject area. This structure, consisting of five research centres, has been implemented and new research leadership and administrative roles were created to support it, including the ECE research board, the Strategic Partnerships advisorship role, and Dr. Aggoun's role as Coordinating of the Digital Media research programme. This was coupled with strong strategic academic partnerships the department has managed to develop with overseas institutions, including BUPT and BUT in Beijing as well as UniKL in Malaysia, which will facilitate the annual attraction of overseas students into our UG and PG programmes and set up a strong platform for durable relationships with highly recognised institutions with sound scientific reputation and sustained record of international partnerships.

Our Industrial Advisory Panel has expanded this year in both shape and volume. Nine industrial representatives are now on board, including large players in the UK Telecoms sector, such as Vodafone, BBC, Thales, BT Labs, NGW and Sony.

Last but not least, although I believe the recent RAE results are yet to be correlated with QR funds before meaningful conclusions can be derived, I do believe that the results achieved by the General Engineering submission (UoA 25), to which ECE had its major contributions, were particularly remarkable especially in terms of the research "Power" figure obtained. The "power", a normalised measure of the Brunel's Market Share in General Engineering ranked us (including ECE's research portfolio) 5th overall in the UK. No matter how this would tie in with other RAE ranking considerations and factors that will determine the QR funding in April, the research "power" listing is something that is worth building on and being proud of, given the large proportion of early career researchers in the ECE contributions to the General Engineering submission (in both the 'Multimedia Communications' and 'Systems and Instruments' groups) and the large number of new appointments made into ECE in the last two years before the census date. This result is a true reflection of the critical mass of world class research expertise available in the subject area and provides a strong evidence that ECE, among other areas in the submission, has made very rapid developments towards achieving the University's global objective of becoming a research-intense institution.

Plans for 2009 include mainly a major restructuring of UG and PG taught provision, aimed at rationalising our programmes in line with the strengths in the subject area putting resource efficiency at the heart of the exercise. This, I hope, will free up some resources for us in a difficult financial climate, that will enable us to meet the challenges ahead and concentrate on our core teaching and research priorities with minimal distractions.

I still truly believe our department has all the right components to become a leading academic department of Electronic and Computer Engineering in the UK. The recent NSS scores and RAE results are a strong indicator that we are on the right track. However, I also do not dismiss the fact that there is much work still to be done to improve on our weaknesses and capitalise on our strengths to achieve the departmental global objectives. In leading the department, I will continue to count on your cooperation, diligence and collegiality which you have been providing over the last 2.5 years of my term.

Prof. Abdul H. Sadka
Award

Dr. A. Amira and his collaborators have been awarded the 2008 Varian Prize by the Swiss Society of Radiobiology and Medical Physics (SGSMP) for the best published paper impacting Radiation Oncology. The prize was awarded at Annual meeting of SGSMP, 6-7 November 2008, Chur, Switzerland for the paper published on the work he has been doing in the area of 3D medical image segmentation using multiresolution statistical approaches.

Recent staff publications


An article about Dr. A. Amira's research in the area of reconfigurable computing and low power design was published in the IEEE Circuits and Systems Society Newsletter, Volume 2, ISSUE 5, October 2008.

Prof. Malcolm Irving has co-authored a new book on Power Systems, published by Springer. 'Modern Power Systems Analysis' offers a broad coverage of essential power systems concepts and features a complete and in-depth account of all the major latest developments in the area. More information about the book is available from http://springer.com/978-0-387-72852-0

Presentations and workshops

Dr. G. Taylor was a featured speaker at the Renewable Energy & Energy-efficient Technologies networking event, hosted in London by the Environmental Technologies Group, 19th November 2008. Dr. Taylor spoke about integrating renewable energy sources into distribution and transmission networks, and about Brunel University's collaboration with the National Grid on assessing wind turbine technology.

Camille Baker led a Mindtouch workshop at the Science Museum's Kinetica Presents 'Future Bodies' event on November 27th. The workshop showed our body's responses through performance and interactive media, using biosensors and mobile applications.

Camille Baker also took part in Mobilefest - International Festival of Mobile Arts and Creativity, which took place in São Paulo, Brasil, in November 2008.

Dr. A. Amira has organised and chaired a special session on “Smart Sensors, Intelligent and Reconfigurable Systems for Biomedical Applications” at the prestigious IEEE Conference on Biomedical Circuits and Systems which took place in Baltimore, 20-22 November 2008. Dr. Amira and Dr. M. Abbod presented two papers respectively in the areas of "embedded reconfigurable computing for medical image segmentation" and "Intelligent Systems for the Prediction of Brain Death Index".

Dr. Amira has been nominated to be one the BIOCAS 2009 conference special session co-chairs, which will take place in Beijing, September 2009.

Dr. Amira has presented an invited paper on his multi-resolution and FPGA research at DASIP 2008, Conference on Design and Architectures for Signal and Image Processing, which took place in Brussels, November 24-26.

ECE PhD student, Mr. Abdul Sazish, supervised by Dr. Amira, has presented an invited paper in the area of FPGA architectures for medical imaging at the prestigious IEEE Asian pacific conference on Circuits and Systems, Macao, China, Nov 30th- Dec 3rd 2008. The paper was presented in a special session on Resource-Constrain Hardware For Digital Signal Processing.
Research funding

- Dr. A. Amira’s trip to attend BIOCAS 2008 conference was supported by the Royal Society though a travel grant (£840).

- Dr. A. Amira has obtained funding from British Council in France for an “Alliance 2009” application which was successful. Funding secured will allow Dr. Amira to establish research links with the “University of Henri Poincare” in Nancy, France.

- Dr. D. Smith and Prof. P. Hobson have received £19,927 from the University of Manchester for their involvement in a star-tracker radiation characterisation programme. The star-tracker, to be used as a positioning device on a scientific satellite bound for Jupiter, required thorough radiation testing to understand how it would perform in the harsh space environment. The group at Brunel provided radiation damage expertise, looking into the effects of radiation on the performance of the star-tracker CCD imaging detector and the star-tracker optics. The Brunel work included carrying out computational modelling of the radiation damage effects and supporting practical irradiation experiments carried out using Brunel's own Cobalt source (gamma rays) and facilities at the nearby Gray Cancer Research Institute (electrons) and the University of Birmingham (protons).

- Dr. Q. Ni has recently got a BRIEF research award. The aim of this project is to build theoretical insights into the issue on how QoS requirements should be supported in emerging WiMAX-based broadband wireless access networks. The project is to develop novel stochastic queuing models for analyzing and optimizing the network systems.

First lunar data sent back

Following the successful launch of the Chandrayaan-1 X-ray Spectrometer (C1XS) onboard the Chandrayaan-1 lunar spacecraft on 22nd October 2008, the instrument was commissioned during December after arrival in lunar orbit and is in good working order. All 24 of the C1XS charge-coupled device X-ray detectors tested and characterised at Brunel by Dr David Smith and his PhD student Jason Gow are fully functional and obtained their first lunar spectra just before the New Year. The instrument works by measuring the energy of X-rays fluoresced from the surface of the Moon by incident particles from the Sun. The Sun is currently at the start of its roughly 11 year solar cycle and as its activity increases during the Chandrayaan-1 mission, X-rays will be recorded by C1XS from all over the lunar globe revealing the elemental and mineralogical composition of the lunar surface. The first lunar spectrum recorded by C1XS is to be presented at the 40th Lunar and Planetary Science conference in March this year and a collection of papers describing the instrument design and the science it aims to accomplish are currently being prepared for publication in Planetary and Space Science.
RUSHES meeting at Brunel

The 8th RUSHES meeting was hosted by Brunel University on 18-19th of November 2008. Approaching the end of its second year, the RUSHES consortium has been focusing on the integration aspects of the project with view to produce the first complete version of the prototype demonstrator by the end of February 2009. The meeting discussions were very intense and focused on generating a number of agreed action points for different tasks and activities of the project work packages. On the evening of the first meeting day, the delegates were taken on a coach ride to the Harte and Garter restaurant opposite the famous Windsor Castle where they enjoyed live piano music as well as the finesse of authentic English food served in the elegant atmosphere of a private room overlooking the Castle. The event concluded with a well attended Project Management Committee (PMC) meeting that has addressed several matters related to the general progress of the project, the preparations for the forthcoming review in early April 2009 and the consortium plans for call-4. All PMC members praised the high standards of organisation featured during the meeting and praised the Brunel team for facilitating the proceedings.

Farewell to Dr. Ian Hutchinson

Dr. Ian Hutchinson left us at the end of December 2008 to take up his new post at Leicester University. Ian has made good input to several aspects of research in electronic imaging with particular emphasis on satellite and terrestrial applications and has also served in several key projects including the induction week and Level 1 multi-disciplinary projects, which were particularly commended by the IET panel last November. Ian has teamed up well with Dr. David Smith and other colleagues in Professor P. Hobson's group and will certainly leave behind a valuable asset of scientific research and academic excellence.

We would like to thank Ian for his valuable contributions to ECE over the last four years, and wish him great success with his new role at Leicester.
Multidisciplinary projects run again

The Level 1 Multidisciplinary Project week took place again this academic year, giving students from all subject areas in the School stories to tell friends and family over the December break. This year over 450 students took part in groups of 9 or 10 mixed discipline members, building small autonomous or wirelessly-controlled vehicles and robots. Demonstrations of the completed project builds took place in the Michael Stirling atrium on the Thursday afternoon and Friday of Week 12, the various designs being set loose on an obstacle course including a ramp, sand pit, rock pile and tunnel. All 50 project teams managed to complete at least some of the course challenges and prizes were awarded to the best design in each of the 5 build categories. Some of the highlights were seeing vehicles controlled wirelessly by team members using mobile phones, Xbox controllers and even Wii remotes, along with one vehicle that completed the entire course autonomously using a pre-programmed microcontroller chip.

Thank you to all academic and technical staff that helped out with the running of the projects this year, making the week an enjoyable and memorable experience for all the students that took part.

New MSc programme

ECE is proud to announce the approval of a new MSc programme in Advanced Multimedia Design and 3D Technologies, which is scheduled to start in 2009/10 and builds on the strengths of our existing BSc undergraduate programmes in Multimedia Technology and Design and Broadcast Media Design and Technology.

This exciting new programme of postgraduate study provides a unique mix of modules that places emphasis not only on the creative process and design aspects of digital media but also on the theory and practice of the technical tools and techniques required for creating intelligent, interactive real and virtual reality media through the synergetic development of design and technology knowledge, understanding and skills.
Student successes

• The dissertation project of last year's BSc Multimedia Technology and Design graduate Jason Peacock is among the three finalists in the animation category of the Royal Television Society Student Awards. The RTS Student Awards are a highly prestigious showcase of the UK's best student work in moving image media. Jason's work has previously been recognised with the award of the University's Thomas Gerald Gray Prize, the 2008 Computer Arts Student Showcase Animation Award of Excellence, and the Hallmark Prize at New Designers 2008. Members of the Multimedia teaching team will be cheering Jason on at the Awards Ceremony at the London Television Centre on the 23rd of February.

• ECE PhD student Umar Abubakar Sadiq recently participated in the Entrepreneurship competition organised by Brunel's Graduate School in partnership with Business Link Ltd and LSC Young Enterprise. The aim of the competition was to come up with an innovative idea, and a technical and financial bid presentation that is acceptable to the panel of judges in order to secure funding from the Graduate School for immediate implementation. Umar's team won the first round of the competition, and was one of two groups selected for the final competition.

Umar's team came first after the presentation and questions from the panel of judges, and so was able to secure funding in the sum of £3000, which will be used to revitalize the graduate common room. Umar expressed his thanks to ECE and CMCR for their support.

ECE expertise at teaching workshop

ECE's Prof. John Stonham, together with the University's Vice-Chancellor, Prof. Chris Jenks, led an Advanced Academic Practice workshop on Developing Lecturing Style, which was organised by the University's Learning and Teaching Development Unit and Staff Development Unit. Prof. Stonham shared many valuable insights from his own teaching experience, with a particular emphasis on engaging students in the fields of engineering and science, before leading a lively informal discussion with colleagues from across the University. The event was both highly informative and enjoyable for all attendees.

The ECE Newsletter is edited by Dr. Angelina Karpovich