SISCM NEWS

School of Information Systems, Computing and Mathematics

Issue 5

Brunel computing students make it 'appen!

The Department of Information Systems and Computing is taking part in the *Samsung bada challenge* along with Oxford University, St Andrews, Trinity College Dublin, Kings College London, University of Abertay, University of Nottingham, University of York and Imperial College. We will be hosting a 24 hour codeathon at Brunel where student teams will design and develop mobile apps with on-site help from the Samsung team.

All teams will be given the chance to hone their designs to compete for the following prizes:

- **Grand Prize: £10,000**
  A fund of £10,000 spread across the Grand Prize winners. A £5,000 first prize, £2,500 second prize and £1,000 third prize, plus a £1,500 Grand Final University prize.
- **First Round: £5,000**
  A prize of £500 to each of the 10 best apps after the codeathon stage – conditional on the winning apps being completed.
- **Handsets for short-listed teams: 100 Phones**
  All short-listed teams will get a developer handset on loan to complete their code, which they will get to keep on condition their app is completed.
- **Promotion for all qualifying apps: £Priceless**
  The best app in the world is worthless if no-one knows about it. Students will get extensive promotion for their apps.

For more information go to: www. badastudentdeveloperchallenge.com

National Student Survey 2011

Mathematics and Statistics at Brunel did extremely well in the recent National Student Survey. Our students are very important to us and we do everything we can to ensure that they receive a high standard of education and care.

This effort is reflected in the recent NSS survey, which shows that 95% of our students are satisfied. This ranks us 10th in the country. In London we are ranked second.

The department did extremely well in the following themes:

- **Assessment & Feedback – 2nd in the country**
- **Learning & Resources – 4th in the country**

This is good news. Our aim is to continue our efforts to provide the best possible experience for our students during their time with us.

The figures for the University as a whole show that Brunel is the UK's most improved university for student satisfaction, ranked 45th out of 141 higher education institutions.

The NSS is a national survey including all institutions and all subject areas, in which students report on their experiences at university. All final year students (Home/EU and international) are eligible to participate.

the National Student Survey
www.thestudentsurvey.com

Need help with maths and stats? Just ask!

Our students need not worry if they are having difficulty with mathematics and statistics on their course. The Mathematics, Numeracy and Statistics service run by The Library's Academic Skills (ASK) at Brunel offers support and help to students who are struggling with mathematical and statistical components of their degree programme. The service helps students to fill existing gaps, encourages them to improve their mathematics skills and to become independent learners.

Mathematics, Statistics and Numeracy help is given via

- one-to-one tutorials
- a daily drop-in service
- weekly workshops
- study guides and advice sheets
- online resources.

A *Maths Café* is also run just before the exam period at the end of April and the so called ASK week (Effective Learning week) twice per academic year.

The Mathematics, Numeracy and Statistics service is particularly useful for students on our Foundation Year programme (Information Systems, Computing and Mathematics with an Integrated Foundation Year) or level 1 students on any of our mathematics courses who need some extra help.

Our students are very fortunate to be supported by ASK's Dr Inna Namestnikova, the 2011 winner of the sigma Rising Star national competition for Mathematics and Statistics Support.

Brunel joins eGovPoliNet initiative

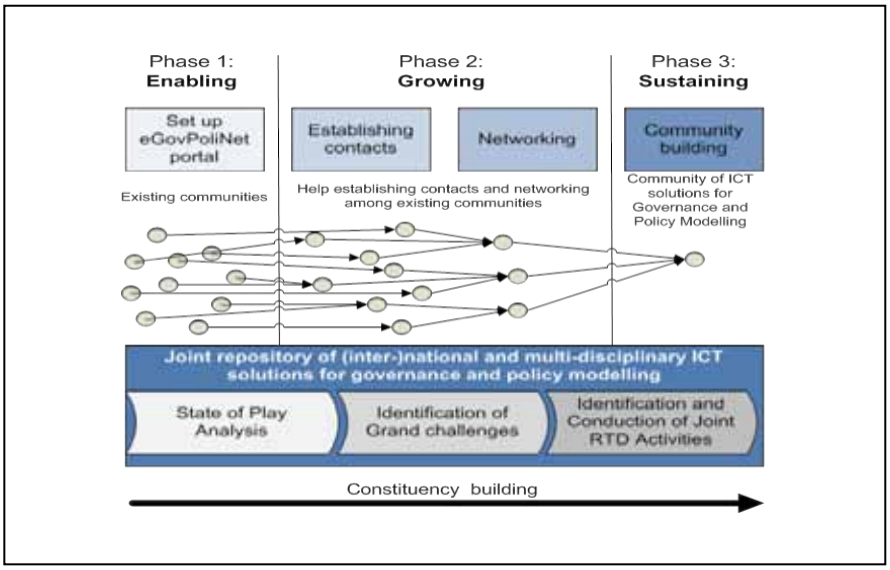
eGovPoliNet is a €500,000 3 year initiative, supported by the European Commission, that aims to establish an International Policy Community which deals with ICT solutions for Governance and Policy Modelling. The 18 partners from 16 countries, both within and outside of the EU, are working together to share ideas, experiences and practices in the field. eGovPoliNet, which began in August 2011, focuses on generating interaction amongst experts from various scientific disciplines and practitioner groups, in order to provide evidence and insight into the development of new methods of Governance and Policy Modelling for those involved in the policymaking process. eGovPoliNet aims to connect relevant international actors to build a global multidisciplinary digital governance and policy modelling research and practice community, which is engaged in research and practical use of ICT use for citizen participation, open government, open data, governance and policy modelling areas.

Professor Tony Elliman, Dr Laurence Brooks, Dr Natasha Papazafeiropoulou (School of Information Systems, Computing and Mathematics) and colleagues (Dr Vishanth Weerakkody, Dr Jeremy Millard and Professor Justin Fisher) are leading work package 1, on Strategy Development. This element focuses on the strategic direction for the project and development strategy for enlarging the community. More information about the project can be found at its website, which is at www.policy-community.eu.

Laurence Brooks

Past President, UK Academy for Information Systems (UKAIS)

President, UK Systems Society (UKSS)



Computer Science research proposal wins accolade

A proposal led by Professor Martin Shepperd has recently been ranked top of all ICT submissions received by the Engineering and Physical Sciences Research Council. The proposal entitled "Metacognitive Instruction, Confidence and Prediction Accuracy in Software Engineering (MICaPASE)" is a joint 18 month proposal with Southampton Solent University, Simula Research Labs, HP and Lloyds-TSB Bank. We believe its multi-disciplinary nature, plus strong international and industry links were major contributors to this success.

The project is about effective prediction, for example of project cost, which is an essential aspect of software engineering. Although considerable research has been devoted to this topic, the role of human experts has been under-emphasised. This project will investigate the impact of enhanced metacognitive awareness on prediction and confidence (uncertainty assessment) to improve the prediction practices of software professionals. This will be accomplished by developing metacognitive awareness during a series of experiments with software professionals as participants. The major outcomes will be a better understanding of (i) the factors that influence prediction and uncertainty assessment skills and (ii) how industry practice can be enhanced.

EPSRC is the main UK government agency for funding research and training in engineering and the physical sciences, investing more than £850 million a year in a broad range of subjects – from mathematics to materials science, and from information technology to structural engineering.

EPSRC
Pioneering research and skills

Freshers' Week

We're pleased to report that the Weather God was smiling on us, so the university's Freshers' week activities took place in fine weather. The Induction programme for the Maths and Information Systems & Computing students was an eclectic mix of events organised by the University, the Union of Brunel Students and the School. Our ever-popular Treasure Hunt attracted lots of teams, who spent a few enjoyable hours trying to answer around 70 questions all about the services and facilities at Brunel. This is a very good familiarisation exercise and is also very good fun.

The highlight of the week was the School Barbecue held on the Friday of Freshers' Week. The sun shone, the food sizzled and the River Pinn flowed gently past. We think the students enjoyed it – the staff certainly did!

Get ready, and stay ready, for university

Whether you are applying for an undergraduate course, or for the dizzy heights of postgraduate research, starting out on something new is always a bit daunting, scary even. Don't worry: we would not be admitting you if we thought you couldn't do well on the course, so your potential has already been confirmed. Now it's up to you to make the most of the opportunities offered at Brunel University – social, sporting, cultural and, oh yes, you'll need to do some work too!

Being an undergrad is quite unlike being at school and being a postgrad is very different to being an undergrad. Both stages require a step change in taking responsibility for your academic development. To help you with this, Dr Martin Greenhow, a Senior Lecturer in the Department of Mathematical Sciences, has written two study leaflets that can be downloaded from http://people.brunel.ac.uk/~mastmmg/ssguide/sshome.htm This web page has become very popular – it even has a fan in Bhutan! Google rates it in the top 10 in a search on 'study skills' so it's easy to find. Tell your friends!

It's not all work though! Picture shows Kimberley Nolasco (BSc Mathematics) in the middle of her dance group.

The undergrad leaflet and web page covers a host of things from time management to getting a job; the postgraduate leaflet and web page gives you a rough map of what a PhD is and where you should be at the end of years 1-3. Most of it is 'obvious' but our students use these pages as a handy check list for the various challenges and tasks they face.

Good luck in your studies!

Brunel's Bright Ideas!

Brunel has always been focused on employability. As part of this we have developed innovative initiatives to encourage enterprising and creative thinking among our students – for example opportunities for them to participate in major student competitions.

During the Autumn term, our students had the opportunity to take part in the following competitions:

Bright Ideas and Bright Science Ideas – the annual competition run by West Focus. Students had the opportunity to win one of several cash prizes ranging from £250 up to £1,000. This simple competition is all about ideas. The entry form requires around 1,000 words – details of the idea, the target market and how they plan to reach that market. It is entirely up to the winners how they spend the prize money and the chances of winning something are pretty high (there are normally around 170-200 entries).

Lloyds TSB is partnering with the National Consortium of University Entrepreneurs (NACUE) to launch the Lloyds TSB Enterprise Awards, offering students and graduates in England and Wales the chance to win up to £50,000. The aim of the programme is to encourage a culture of young enterprise and support the needs of businesses in their critical early years. Through these awards Lloyds will be searching for the two businesses that it believes stand out amongst the many thousands of existing enterprises. The expectation is that the winners will inspire the entrepreneurs of the future.

Two awards will be made - Best Enterprise and Best Start-up Enterprise Business. National winners will receive £50,000 in cash and business mentoring to take their business through to the next phase of growth. Students and graduates in England and Wales who are looking to start up a new business venture may apply.

PC World Business - the Generation Y Not? A competition to find the UK's upcoming young entrepreneurs.

The initiative will reward five individuals deemed to have the best business ideas as well as those who use technology in innovative ways. The competition is one of the first in the UK to ask entrants to Tweet their business plan in 140 characters or less.

Prizes include an Advent laptop, a Brother printer, £250 to spend in PC world, six months' membership to one of The Office Group's office spaces, plus mentoring sessions to help the winners start and grow their business.

We hope as many of our students as possible take up the challenges!

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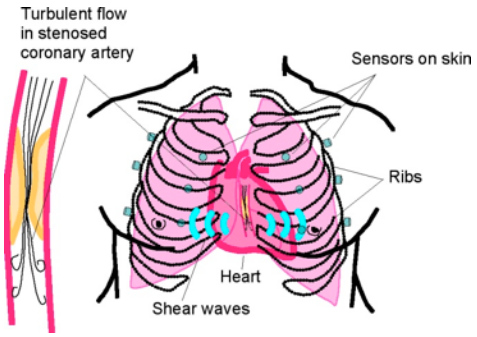
Brunel UNIVERSITY LONDON

SPOTLIGHT ON RESEARCH

Computational Maths – what's that all about?

The Brunel Institute of Computational Mathematics (BICOM) was set up in 1976 by Professor J R Whiteman to create a focussed research activity in the, then, rapidly developing area of finite element methods. This methodology, developed independently by engineers and mathematicians, is used to approximate partial differential equations and thereby use the power of digital computers to generate solutions to difficult physical problems that arise in areas as diverse as stress analysis, heat conduction, polymer moulding, combustion, soft tissue dynamics and electromagnetism (to name but a few). That rapid development in the subject has continued unabated and BICOM remains a major player on the world stage of research into the mathematics and novel application of this powerful methodology. Currently BICOM members have collaborative research ties with various centres in, among others, the USA, Chile, Germany, Hong Kong, Georgia and the Czech Republic.



One of BICOM's current EPSRC funded projects is both multi-disciplinary and multi-national in that, together with Dr Simon Shaw and Prof. J R Whiteman at Brunel, it involves biomedical engineers and clinical physicists at Queen Mary and Barts and The London NHS Trust, and also mathematicians at the Center [sic] for Research into Scientific Computation at North Carolina State University. This team are engaged on a project seeking to determine whether coronary artery disease can be computationally and non-invasively diagnosed through the solution of a mathematical inverse problem. Blood flow turbulence in the wake of flow past an arterial occlusion causes acoustic shear waves to be `audible' at the chest surface – see the schematic diagram above.

Another area of acknowledged expertise in BICOM is that of the computational modelling of thermoforming processes. In these processes hot thin polymer sheets are forced under pressure into moulds and then cooled to become thin-walled structures. The large deformation can include hyperelastic, viscoelastic and elasto-plastic effects. To date the sheets have mostly been made of oil-based polymers, which of course do not degrade and thus form waste material unless they are recycled. Recently Professor John Whiteman and Dr Michael Warby have been modelling structures made of biomaterials which will biodegrade after use, and which are therefore ecofriendly; a new technology. Such structures are slowly being adopted by the food packaging industry; see for example the photograph below:

For further information please contact BICOM's director,

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www.brunel.ac.uk/siscm/mathematical-sciences/research/bicom

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