# Research Bytes

**Welcome** to the *Summer Term* issue of

## Research Bytes

Another busy and successful year draws to a close. The summer, usually a time for quiet reflection, will be spent making sure that our views on the Roberts Review of the RAE are taken into account. This is my last frontispiece as Director of Research and I would like to publicly record my thanks to Androulla for the excellent job that she has done in creating the recent issues of this Newsletter.

As always, this edition is packed with news and I hope you enjoy reading it!

### Chris Hankin, Director of Research
### Department of Computing

## Dagstuhl Seminar  *"Reasoning about shape"*
http://www.dagstuhl.de/03101

About 25 model checkers, program analysts, and theorem provers gathered in this very interactive and productive meeting to discuss how established methodology can be extended or adapted to deal with `shape' --- examples being the shape of a heap structure manipulated by programs or the dynamic topology of an ad hoc wireless network. Three representative research efforts are

http://www.math.tau.ac.il/~rumster TVLA has been used to analyse programs that manipulate linked lists; it uses first-order logic with transitive closure to encode the required `shape theory' and analysis constraints, but is doubly exponential in the length of programs in the worst case.

http://research.microsoft.com/behave/sharpie-report-abs.html
Sharpie is a staged framework with behavioural types for asynchronous programming.  Its behavioural type system "allows programmers to state succinct descriptions of the externally visible behaviour of each operation in a stage.  A novel modular type checking algorithm ensures that the code implementing an operation conforms to stated behaviour."
http://www4.informatik.tu-muenchen.de/~nipkow/pubs/cade03.html
Isabelle/HOL is a higher-order theorem prover in which Prof Nipkow implemented Barnat's Hoare triples for pointer programs- based on separation logic.  This implementation is used to prove the correctness of the Schorr-Waite graph marking algorithm (not presented at the meeting, but talked about).
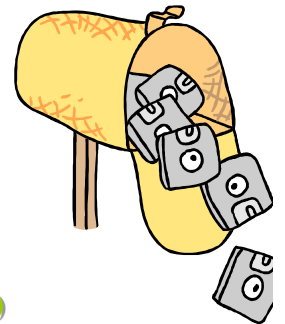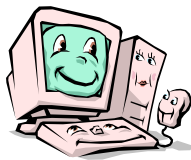
*Work-in-progress reports identified the following needs:*
**\* The ability of model checkers to generate models that meet specific non-propositional constraints;**

**\* The focus on approaches that promise at least some scalability - e.g. Airbus software of up to 1.2M lines of code was analysable due to its high structural integrity;**

**\* The ability of model checkers and theorem provers to express and analyse HYBRID logics, e.g. temporal sequences of heap structure evolution;**

**\* A Systematic study on which shape constraints give rise to (omega)-regular languages - e.g. as is the case in Bruno Blanchet's PhD thesis on Escape Analysis for Standard ML and Java - possibly enabling automata-theoretic techniques for verification and analysis.**

**http://www.dagstuhl.de/03101**
**ftp.dagstuhl.de/pub/Proceedings/03/03101**

**Online Proceedings are available.**

*Michael Huth*

**NEW RESEARCH GRANTS FOR PMEG Research Group**
**Passage Times in Large Markov and Semi-Markov Chains (PASTRAMI)**
**GR/S24961/01  (PGH and WJK, about 260K)**

**Risk Management for Queueing Systems**
**GR/S27849/01  (PGH and BR, about 250K)**

**Product-forms from Markovian Process Algebra (PRO-FORMA)**
**GR/S45140/01  (PGH, about about 50K)**

**PETE HARRISON AND DAVE THORNLEY**

# Fiesta Day

**Due to popular demand the *Fiesta* day returned for 2003.**
**The Fiesta day is a light-hearted or fun day for PhD students to show-off their work and get together and chat about all things PhD.**

**This year's was held on Friday 13th June (flouting any superstition therein) and we had some changes.  The theme for this year's fiesta was 'Getting it in on time'.  The day's Programme was**

| | |
|---|---|
| 10.30-11.30 | Invited Speaker |
| 11.30-12.00 | coffee/ Poster Session 1 |
| 12.00-13.00 | final year presentations (x3) |
| 13.00-14.00 | lunch (own) |
| 14.00-15.00 | final year presentations (x3) |
| 15.00-16.30 | coffee/ Poster Session 2 |
| 16.30-17.30 | **DEBATE:   'This side of the house believes Theory PhDs take longer than Implementation-based PhDs'** |
| 17.30 - late | Fiesta party with Prize Presentations (poster, presentation, debating team) |

**What was required from the students:**
✔ **Year 3 or above volunteers:  20-minute presentation**
✔ **All other students: a 1 A4-page poster (or reuse of a poster already done)**
✔ **Two debating teams each consisting of: 1 final-year person, 2 'implementational' PhD and 2 'theory' PhD people respectively per team.**

**Prizes were given for the best Poster, Presentation and Debating team**
Best Presentation award: **SIMON RIZZELLO** with 6 votes
Best Poster award: **DIMITRIOS PERPERIDIS** with 5 votes
Winning Debating Team: IMPLEMENTATION with 13 votes (Theory had 6)

**THANKS to all those who made the day a success!!!**
**Julie McCann**

## Funding for PhD Applications for 2004

We have been given '*provisional advance warning'* on the deadlines for next year's funding for applications LEE, ORS and EPSRC.

**LEE** – The closing date for applications to reach IC Scholarships will be *January 2004*. Applications will then be sent to each Department in February with final decisions to be made in March/April.

**ORS** – the general consensus was to bring forward the whole ORS cycle by approximately 10 weeks. This is to enable the results to be announced by the end of April. This means that ORS applications will run virtually parallel to LEE scholarships.

**EPSRC DTAs** – This year we encouraged the EPSRC student applications to be submitted by 1st April. This worked well. In light of the above, it may be essential to have an early deadline next year.

*This means that PhD students need to be holding offers for autumn 2004 by early January next year in order to be considered for the above funding!!!*

**MORE** INFORMATION TO FOLLOW IN THE Autumn Newsletter!

# PhD Timeframe

| IC/UoL or DoC | FORMAL MILESTONES | OUTCOME/DETAILS |
|---|---|---|
| IC/UoL | Immediate - 0 months :  English Language proficiency test for non-native English speakers | If not applicable, exemption may be requested by Supervisor and Postgraduate Tutor. |
| DoC | Year 1 – 3 months :  Periodic Progress Report | |
| IC/UoL and DoC | Year 1 - 9 months : . First Formal Review First Year Report (about 20 pages) and First Year Presentation (25-30 minutes) | Progress is assessed by reviewers; if unsatisfactory, students may be asked to re-submit. |
| | If not successful, student may be asked to withdraw | |
| DoC | Year 1 – 12 months – Periodic Progress Report | |
| DoC | Year 2 – **18** months – Periodic Progress Report | |
| IC/UoL and DoC | Year 2 – Months 12 - 18: MPhil to PhD formal transfer seminar and extensive written report, together with the outline of thesis, and plans for completion. | Transfer from MPhil to PhD registration is approximately halfway through the second year<br><br>Hilfred Chau Memorial Prize awarded for best MPhil/PhD Transfer Report |
| | Possible outcomes: 1) continue to PhD, 2) continue for MPhil, 3) asked to withdraw | |
| DoC | Year 2 – 24 months – Periodic Progress Report | |
| *IC/UoL* | *Year 2 – 24 months – minimum completion of full-time study for MPhil, PhD and DIC* | |
| DoC | Year 3 – Month 25 **– Plan for Finalization** | Student and Supervisor draw up a plan for finalization of the research and write up of thesis within the end of third year. |
| IC/UoL | Year 3 – maximum completion is 27 months for MPhil & DIC – therefore **latest** submission date for MPhil dissertation | |
| DoC | Year 3 – 30 months **–** Periodic Progress Report | |
| IC/UoL | Year 3 – 30 months **Latest** date for submission of PhD Examination Entry Forms | |
| DoC | Year 3 – 36 Months **–** Periodic Progress Report | |
| DoC | Year Three- around 32nd month: Research Presentation (30 min seminar) | |
| IC/UoL | Year 3 – 36 months – **Latest** Date for submission of PhD dissertation | |
| IC/UoL | Year 4 – 40 months – **Latest** date for submission of PhD examination entry form | |
| DoC | Year 4 – 42 months – Periodic Progress Report | |
| DoC | Year 4 – 48 months – Periodic Progress Report | |
| DoC | Final Year – 54 months – Periodic Progress Report | |
| IC/UoL | **Final Year, 60 months: Latest date for submission of PhD Dissertation** | |

**PLEASE NOTE – This list of** milestones is written under the assumption that students start in **October**.   Internal milestones (i.e. progress reports, and nine month progress talks) apply to **all** students *irrespective* of whether they start in October or later on in the academic year.  Talks usually take place at the same time each year, usually every January and July.

*ALL* **current** information on PhD research procedures can be found on our Departmental website under the Research icon!!  Just 'click' on 'Postgraduates' under **'*Information on Research for Students'*

# Welcome to ALL THE FOLLOWING new staff/students who recently joined us!!!

Catherine Wang who joined us on 16$^{th}$ June as a new Secretary in the Department.

Oliver Wells, UbiCare Project Manager who joined us on 1$^{st}$ June, working with Morris.

Welcome ............ New Staff

Paul Aljibar who joined us on 1$^{st}$ April.

Dr Xinzhong Li who joined us on 16$^{th}$ June.

Dr John Tchalenko who joined us on 1$^{st}$ May.

Welcome .......... Research Assistants

Kanwal Bhatia who joined us on 1$^{st}$ April.

Welcome .......... PhD students

Theodore Hong who started as a TA in February 2003.
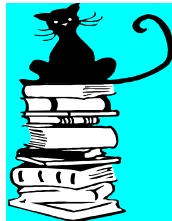
Welcome .......... Teaching Assistants

*Congratulations to Dr Robert Merrifield, British Heart Foundation (BHF) Junior Research Fellow, who started 1st June, working with Guang-Zhong and team.*

*T*he following have recently been awarded their PhDs!

✓ Stephen Barker
✓ Martin Berger
✓ Juan Carlos Fernandez-Ramil
✓ Alexandros Pappas
✓ Shamima Paurobally
✓ Rueiher Tsaur
✓ Sebastian Uchitel

*Our CONGRATULATIONS go to them all!!!*

**C**ongratulations to:
Alexandros Chortaras – awarded the *Morgan Stanley Prize* in Advanced Computing for 2002.  This  prize is awarded each year to an MAC student for the best individual project and is of the value of £200!

All our best wishes and thanks go to the following who recently left the Department for 'pastures new'!!!
✈ Jill Payne
✈Linxue Sun

Department of Computing Lectureship posts
The response to the advertisement for lecturers within the Department was successful……………..
✏ *109 applications received*
✏ *12 applicants were interviewed*
✏ *6 Offers were made*

**C**ongratulations to the following who will be joining the Department as Lecturers:
Khalil Amiri              – in January 2004
Jeremy Bradley          – in January 2004
Sebastian Uchitel       – in December 2003

# TERM DATES:

**Session 2002-2003**
28 September – 13 December 2002
4 January - 21 March 2003
## 26 April – 27 June 2003

**Session 2003-2004**
4 October – 19 December 2003
10 January – 26 March 2004
24 April – 25 June 2004

**Graduate School of Engineering and Physical Sciences**
Following on from the Launch of the new Graduate School last October 2002, several Newsletters have been issued.  If you are interested in receiving your own copy or back copies, please contact **sophie.white@ic.ac.uk**

**\*\*\*\*\* GSEPS DIARY DATES \*\*\*\*\***



*Summer* **Research Student Symposium –** *Wednesday 16th July 2pm*, **Great Hall, South Kensington campus**
*For more details email Sophie.white@imperial.ac.uk or refer to the May Issue No. 4 of the GSEPS Newsletter!!!*

*Postgraduate* **Study Opportunities Open Day –** *Friday 21st November 1pm-5pm,* **Great Hall, South Kensington campus**
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GSEPS are pleased to **announce** that in April 2003 **Professor Dame Julia Higgins**. **Director of the Graduate School was appointed** *Chairman of the EPSRC Council!!!*
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Research Bytes is *the* Research Newsletter for the Department of Computing!
Our aim is to publish 4 times a year – end of October, January, April and July.  We aim to include articles such as events for the diary, new funding opportunities, examples of innovative research, visits to conferences etc etc etc.  Please send any contributions to Androula Pieri, Research Secretary, a.pieri@imperial.ac.uk.  Back copies can be found on the Doc Web pages under Research. We reserve the right to edit/refuse any contributions!

DEADLINE FOR October ISSUE Friday 5th September 2003