

Global Synchronization in a Mobile Context
12 Month Progress Report
April to September 2006

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Chapter 1

Activity Summary

Below is a synopsis of activities taking place over the last six months (since the last panel meeting), from April to September 2006.

1.1 Research

A full discussion of current and future research is included in the transfer report.

1.2 RTP

Thirty credits of work has been undertaken during 2005-2006, over three RTP modules, which are as follows:

1. **GSC6100 – Library and Information Skills for Successful Research:** This module involves the completion of a series of research tasks, including the development of a literature review and bibliography. This has now been successfully submitted and the appropriate credits awarded.
2. **GSC6310 – Personal and Professional Skills Development 2:** This module gives credit to a number of tasks performed as a postgraduate student which aren't directly related to the research being undertaken. This includes credits for participation in group activities, such as seminars, demonstrating work, paper publication and administrative duties such as personal website maintenance. It is believed that an appropriate amount of work has been done, so a claim for the credits for this module will be filed in the near future.
3. **COM6890 – Theory of Distributed Systems – Exemption:** An exemption from this module has been agreed with Mike Stannett, due to its successful completion as an undergraduate at an appropriate level for consideration here.

This already meets the requirements of five credits in the A and B categories. The remaining fifteen credits of RTP work are to be undertaken in 2006-2007, over two modules:

1. **GSC6120 – UK GRAD Programme:** This is a mandatory unit for EPSRC-sponsored students.
2. **Midland Graduate School:** A case has been made for claiming ten RTP credits for attendance at the Midland Graduate School (see below). This is where the credits in the C category (subject-specific material) are expected to come from.

1.3 Publications

The following publications have been produced over the last six months:

1. HUGHES, A. Nomadic time (extended abstract). In *Proceedings of the PhD Programme at Relational Methods in Computer Science/Applications of Kleene Algebra (RelMiCS/AKA) 2006* (2006), R. Schmidt and G. Struth, Eds., no. CS-06-09 in University of Sheffield Technical Reports, pp. 60–64.

1.4 Talks

The following talks have been given over the last six months, copies of which are available at <http://www.dcs.shef.ac.uk/~andrew> along with all previous talks.

1. **Nomadic Time:** Delivered to the Verification and Testing research group on the 6th of October, 2006.
2. **Nomadic Time:** Delivered to the RelMiCS PhD workshop in Manchester on the 29th of August, 2006.
3. **Nomadic Time:** Delivered to the Concurrency Reading Group on the 22nd of August, 2006.
4. **Typed Nomadic Time:** Delivered to the Theory Special Interest Group on the 7th of July, 2006.
5. **Combining Timing, Localities and Migration in a Process Calculus:** Delivered to the British Colloquium on Theoretical Computer Science (BCTCS) on the 5th of April, 2006.
6. **Combining Timing, Localities and Migration in a Process Calculus:** Delivered to the Theory Special Interest Group on the 31st of March, 2006.

1.5 External Activities

The following activities have taken place outside the department in the last six months:

1. **28th of August - 2nd of September, 2006:** Attendance at the conference on Relational Methods in Computer Science (RelMiCS) and the workshop on Applications of Kleene Algebra in Manchester, along with a presentation at the associated PhD workshop.
2. **19th of July, 2006:** Attendance at the Types workshop at Royal Holloway in London.
3. **18th - 21st of April, 2006:** Attendance at Types/Trends in Functional Programming 2006 in Nottingham.
4. **8th - 12th of April, 2006:** Attendance at the Midland Graduate School (MGS) in Leicester.
5. **4th - 7th of April, 2006:** Attendance and presentation at BCTCS in Swansea.

1.6 Demonstrating

The following demonstrating duties have been performed within the department during the academic year 2005-2006:

1. **COM1030: Requirements Engineering - Autumn Semester 2005:**
 - Helping students in tutorial classes in the Lewin Lab.
 - Marking stages 1 and 2 of the ‘Crossover’ project.
2. **COM2010: - Autumn Semester 2005:**
 - Marking Haskell-based assignments.
3. **COM2060: Database Systems - Autumn Semester 2005:**
 - Helping students in large group (lecture-hall size) tutorial classes.
4. **COM1040: Systems Analysis and Design - Spring Semester 2006:**
 - Helping students in tutorial classes in the Lewin Lab.
 - Marking stages 3, 4 and 5 of the ‘Crossover’ project.
5. **COM1090: Computer Architectures - Spring Semester 2006:**
 - Helping students in tutorial classes in the Lewin Lab.
6. **COM2020: Abstract Data Types - Spring Semester 2006:**

- Marking student assignments.

7. **COM3170: Concurrent Systems - Spring Semester 2006:**

- Answering student questions using the WebCT system
- Invigilating the quizzes taken by the students
- Marking assignments.

The following duties have been allocated for the 2006-2007 academic year:

1. **COM2060: Database Systems - Autumn Semester 2006:**

- Helping students in large group (lecture-hall size) tutorial classes.

2. **COM2030: Machines and Languages - Spring Semester 2006:**
Duties as yet unknown.

3. **COM1030: Requirements Engineering - Autumn Semester 2006:**

- Helping students in tutorial classes in the Lewin Lab.
- Marking stages 1 and 2 of the ‘Crossover’ project.

4. **COM1070: Introduction to Artificial Intelligence - Autumn Semester 2006:**

- Running weekly tutorial sessions developing writing skills.

5. **COM3190: Theory of Distributed Systems - Autumn Semester 2006:**

- Remedial tuition and tutorial sessions.

1.7 Administrative Duties

The following administrative duties have been performed within the department:

1. **VT Research Lab Management – November 2005 on:** This has involved ensuring the provision of sufficient resources within the lab for new and existing students, and liaising with appropriate staff as necessary in addition to general problem solving as issues arise. Recently, this has included a thorough re-organisation of the lab, in preparation for an influx of new students, and an informal meeting to discuss ideas.
2. **Organising and Chairing the Theory SIG meetings every Friday – January 2006 on:** This has involved timetabling various speakers and other activities for the session, as well as (attempting to) co-ordinate the meeting itself. Lately, this has also included the shameless promotion of the session via posters and a regular slot on the plasma screen.

3. **Instigation and Organisation of the Concurrency Reading Group every Tuesday – March 2006 on:** This new group was formed to stimulate interest in the subject of concurrency within the department, and to hopefully cover a wider variety of research material than is possible within the scope of a single postgraduate study. Again, this is also promoted via the use of posters and the plasma screen.
4. **VT Postgraduate Representative – June 2006 on:** A group of postgraduate representatives, one for each research group, was formed as a result of the PhD activities at the Research Retreat on the 25th of May, 2006. So far, two meetings have occurred, one in June and another discussing the arrival of new postgraduate students on the 27th of September, 2006.
5. **Organisation of Social Events – June 2006 on:** During the summer of 2006, the VT group has participated in five lunch outings. Two successful picnics were also organised, open to all members of the department.
6. **Organisation of the ‘Future Trends in Hypercomputation’ Workshop – 11th to 13th of September, 2006:** This included various activities from registering participants through organising refreshments to participating in the workshop banquet.
7. **Departmental Postgraduate Representative – October 2006 on:** Attendance at departmental meetings, representing postgraduate students.

Chapter 2

Future Plans

Note that this plan will vary over time, and there is no guarantee that all tasks will be completed within the scope of this research. Notably, most, if not all tasks within section 2.3 are likely to form part of the future work section of the thesis. Full details of these issues are given in the transfer report.

2.1 Short Term

- Completion of the type system.
- Publication of current results.

2.2 Medium Term

- Equivalence theory.
- Biological modelling using TNT.

2.3 Long Term

- Look at this new localised migratory calculus in the context of P systems.
Can a reasonable semantics be provided?
- Other areas of application e.g. pervasive computing