Report from 5th ARTES Graduate Student Conference

Mälardalen University, February 22-23, 2005

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Motivation

"The main idea with the ARTES Graduate Student Conference is to provide a forum for technical presentations and discussions among the Swedish graduate students active in the real-time area. For newly recruited graduate students it will provide an opportunity to experience 'a real conference situation' (maybe) for the first time. For everyone, the conference will be an excellent opportunity to, in a relatively short time, get an overview of the current state of the national research." (By ARTES)

Presentations

11 ARTES PhD students from different universities introduced their research work. Among these 8 presentations are available in the proceeding on the ARTES website. I introduced my project "model-based development and competence integration within mechatronics".

Interesting Lecture

Dr. Wolfgang Weck from Switzerland gave an interesting lecture about the Eclipse Integration Framework "How is Eclipse coming along as a component framework". This is a conjunction with ARTES graduate course "Advanced Component-Based Software Engineering". The slides are available on the course website.

Activities

February 22, we visited the ABB at västrås. That night we had dinner at STRIKE, where offered good meal and free blowing.

Travel Report from DATE 2005

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This year, *Design, Test and Automation in Europe (DATE)* conference was organized in Munich, the capital of Bavaria, from 7th to 11th March. DATE is the most prestigious conference in the area of design automation in Europe. The conference is always complemented with the *Exhibition*, where companies across the Europe can seek for cooperation with each other and research institutes. The total number of participants in both the exhibition and the conference was more than 3.000. DATE is known among the companies working in electronic design automation (EDA) and testing for automotive, consumer electronics, aerospace, medical equipment, and other industries. Researchers from the companies also presented their outstanding contributions to the area during special sessions in a framework of the *Designers' Forum*. Only the best papers and the best contributions can be presented at DATE, which is also known for a low acceptance rate (less than 25%) and a great number of paper submissions (more than 800 this year).

My colleagues and I presented a full paper in the track of *Electronic Design Automation (EDA)* during a special automotive day. Our paper "*Design Optimization of Time- and Cost-Constrained Fault-Tolerant Distributed Embedded Systems*" was nominated for the **Best Paper Award** in the EDA. Despite tense competition, we won the Award and were later notified as the winners. This prize should indicate a strong position of Swedish research and industry in the area of electronic design automation.

The invited keynote speakers were covering different aspects of electronic system design. Dr. Jeong-Taek Kong from Samsung Electronics introduced the area of nanotechnologies and pointed out on challenges that Samsung is facing. He named two main challenges as "design for low power" and "design for fault tolerance". The second keynote speech was given by Harald Heinecke, Manager System Design Architectures from BMW. He emphasized the importance of designing reliable vehicles and creating architectural paradigms that can reduce costs and increase functionality for satisfying customers. Herald mentioned that at most 90% of all last innovations in cars were due to electronic components. The framework being developed within the AUTOSAR project can solve the problem of complexity and lowering costs.

I found the conference very exciting and was trying to communicate with researchers and companies' representatives. However, none of my discussions resulted in any cooperation or joined projects, at least not yet.

Munich is quite an interesting place to visit. Even though Munich is a city population vise, it has a feeling of an old town. The downtown accommodates many museums including the Deutsches Museum, which was the most interesting from my point of view. It is possible to taste Bavarian food at almost every place; particularly, sausages were the most special.

Travel report - CSMR ’05

By Johan Andersson, Mälardalens University, Västerås

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The European Conference on Software Maintenance and Reengineering (CSMR) is the premier European Conference on Software Maintenance and Reengineering. The 2005 conference was the 9th so far, and was held from the 21st to the 23rd of March at the Weston Conference Centre in Manchester, UK. I went to the conference as co-author of the paper *“Model Synthesis for Real-Time System”*, together with Joel Huselius. This was our first visit to a conference related to reverse engineering, so it was very interesting and gave a good overview of the area. We also got the opportunity discuss our research with Prof. Tarja Systä, from Tampere, Finland, who have been doing related research, although not for real-time systems. Most paper presented at the conference discussed information extraction from “legacy” code, but (obviously) not for real-time applications but for “desktop” OO applications or web services.

The city of Manchester is the third largest city in the UK, after London and Birmingham, and has a population of about 2.5 million. It was a positive surprise. I had never been to Manchester before and had a bit of a negative image, consisting mainly of football hooligans, criminality and old industrial buildings. I was wrong. I experienced it as a very nice, vibrant city, with a lot of shopping, culture and pubs. The old industrial buildings had a certain charm, and there are many modern buildings as well. We didn’t see any football hooligans, or even football fans. Criminality may be a problem in Manchester, there is (or at least used to be) problems with criminal gangs, but mainly in the suburbs. However, we didn’t have any problems. I can recommend a visit to Manchester.

Travel Report from ICSE 2005

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5th Dec 2005

This year, the jazzy city of St. Louis, USA, hosted the **ICSE** conference from 15th to21st May. ICSE is one of the largest and most prestigious conferences within the area of software engineering. I had a long paper accepted at the 8th international Symposium on Component-Based Software Engineering (CBSE) which was held in conjunction with the ICSE conference. ICSE is a very large conference with almost 1000 participants, more than 70 papers on the main conference, four adjunct and co-located events and almost 20 workshops and fifteen tutorials. During the conference there are also many industrial sessions and events.

It was very exciting to participate in the conference and even more exciting to present my paper at CBSE. CBSE8 was a two day event with 23 papers and about 70 participants. As usual the symposium was very discussion oriented, and many of the senior researchers within the community participated in the discussions. One of the hot discussions of this year was regarding the direction of component-based software engineering. Several of the senior researchers within the community expressed the need for 'real results'.The sympsium featured an invited talks by Dave Thomas, IBM OTI Labs. Dave talked about the implications and necessity of component-based engineering. The talk was very interesting and just the right amount of provocativeness expected from a good keynote.

The invited keynote speakers of the conference were overall good, though the topics and quality of presentation were in my opinion a bit varying. The topics were a bit to specific and not as provocative as I would expect from a keynote at such a big conference. None of the keynotes could measure up to last years invited talk by Richard Stallman.

The most interesting part of the conference was, as usually, to meet and talk to fellow researchers. I met several fellow researchers from last year's conference, with whom I continued some rather interesting discussions. That is one of the very rewarding parts of returning to the same conference and joining the same people.

St.Louis is a rather typical mid/south city with many small RnB-pubs and restaurants. The atmosphere in the smaller neighbourhood's bars is very bluesy and jazzy. One performance that I and a few colleges went to was a guy that played excellent blues guitar; half way through the performance he was clearly inspired by something and started playing with the guitar behind his neck, behind his back, on the floor with his tteth, and finally with his tongue. A night well worth remembering.

Report from the Fourth Annual Mediterranean Ad-Hoc Networking Workshop 21-24 June 2005

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December 19, 2005

1 Venue

The fourth Mediterranean Ad-Hoc Networking Workshop (hereafter MedHocNet) was held on the beautiful island of Porquerolles, located in the south east part of France. The weather was warm and nice during my stay, that is sunny and about 30 degrees Celsius. I celebrated MidsummerŠs Eve together with my girlfriend who accompanied me to Porquerolles. Being someplace warm was a nice change compared to the ordinary rainy Swedish Midsummer.

Three pictures from the island of Porquerolles are shown in Figure 1. The upper left is from the workshop itself while the rest show Porquerolles at day and at night.

2 Workshop

The aim of MedHocNet is to bring researchers together to discuss issues within the area of ad-hoc communication in wireless networks. The name of the workshop, that is Mediterranean Ad-Hoc Networking Workshop, may suggest that there is a restriction on the nationality of the researchers attending. This is however not the case, the name only suggest that the workshop venue is to be located in the Mediterranean area. The nationality of the tendencies was actually well spread (e.g. from North America, Europe and Asia).

Figure 1: Some nice pictures from Porquerolles.

My contribution to the workshop was to present a work on how active network measurements methods, estimating the end-to-end available bandwidth, are affected by wireless networks. For such methods performed on top of the unifying IP layer it may seem reasonable to expect the measurement problem in wireless networks to be no different than the one in wired networks. However, that is not the case.

Soft real-time systems that depend on the available bandwidth can use the estimate in order to adapt and adjust the send rate to the current conditions. For example, a tool that is streaming live TV to viewers over a network (e.g. the Internet) adjusts the send rate by changing the quality of the stream. A lower quality requires less available bandwidth.

From a real-time area point of view, there were not many interesting papers. Most of the papers were, of course, about wireless properties and ad-hoc networks in general. However, some papers in the quality-of-service session may be of interest. Most of the papers and PowerPoint presentations can be obtained from *http://med-hoc-net2005.lri.fr/*

Breakfast, lunch and dinner were included in the workshop. The French food was excellent. Of course, wine was served for both lunch and dinner.

3 Experiences

It was an important experience to present a work on active measurement methods to an audience that was not too familiar with the concept. Many questions was of the type "do we really need this?" and "how will your measurements affect the ad-hoc network?". That is, I got a chance to defend my work, even though I may not have convinced the toughest critic.

There was plenty of time for discussions with other researchers after each session. This was nice since I got some time to talk about my research contribution, and especially on how to improve my work, with other researchers.

ARTES Travel Report
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REALWSN 2005

2005-11-24

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The first workshop on Real-World Wireless Sensor Networks (REALWSN) was held June 20 – 21, 2005, in Stockholm, Sweden. The main purpose of the workshop was to bring together researchers and practitioners, with focus on real-world experiences such as experiments and deployments of WSN.

The presented papers covered deployment experiences in different real-world settings. In particular, localization issues was a hot topic. I presented a paper at the workshop with the title "*Timber as an RTOS for Small Embedded Devices*" [2]. The subject of the paper is somewhat far from the main topic of the workshop, i.e. real-world experience is not really the paper's main contribution. Nonetheless, the idea of uniting programming language semantics and operating system features as one part is interesting when aiming towards robust WSN.

Among the other papers, the most interesting one according to me was "*Using Protothreads for Sensor Node Programming*" [1]. The main contribution of the paper is to exploit some (fancy) features of C to describe a state machine in the form of a sequential order of actions. At the first glance, it seemed like a reckless misuse of a faulty attribute in the language C. However, used properly, encoding state machines as sequential actions can be accomplished by Protothreads.

We (the attendees) were invited to a boat-trip to Vaxholm, an island in the beautiful archipelago of Stockholm. At Vaxholm, we were served a fabulous dinner.

References

[1] Adam Dunkels, Oliver Schmidt, and Thiemo Voigt. Using Protothreads for Sensor Node Programming. In *Proceedings of the first workshop on Real-World Wireless Sensor Networks REALWSN'05*, 2005.

[2] Martin Kero, Per Lindgren, and Johan Nordlander. Timber as an RTOS for Small Embedded Devices. In *Proceedings of the first workshop on Real-World Wireless Sensor Networks REALWSN'05*, 2005.

Travel report
International Conference on
Embedded Systems and Applications (ESA)

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ESA-05

The 2005 international conference on embedded systems and applications (ESA) was held in conjunction with the 2005 international multi-conference in computer science and engineering at Monte Carlo resort in Las Vegas, Nevada USA, during June 27-30.

According to the ESA chair, the conference received a large number of submissions from Asia Pacific, Europe and North America. Totally 38 papers (including poster papers) were accepted for presentation.

I presented a paper in the real-time session (totally nine papers were presented in the real-time systems session). The contributions and presentations were varying very much. The presentations were held in rather small rooms, which created a nice atmosphere for questions and further discussion.

My overall impression of the conference is quite positive. I met many interesting researchers from all over the world.

The weather in Las Vegas was very dry and extremely warm (approx. 107ºF). Stores were open 24 hours a day.

Travel report
17th Euromicro Conference on Real-Time Systems (ECRTS)

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ECRTS-05

The 17th Euromicro Conference on Real-Time Systems (ECRTS) was held in Palma de Mallorca, Spain, during July 6-8.

ECRTS is one of the leading European conferences for real-time researchers. According to the program chair, the conference received 145 submissions out of which 26 were presented at the conference. Eight main sessions and two Work in Progress sessions (WiP) were organized. Keynote talks were held by representatives from Ericsson, ENEA and the European Commission.

I presented our ongoing work on industrial requirements in development, in a WiP session.

The day before the opening of the main conference, four different workshops were organized:

- WCET 2005 – International Workshop on Worst Case Execution Time Analysis
- RTN 2005 – International Workshop on Real- Time Networks
- RTC 2005 – International Workshop on Real-Time and Control
- OSPERT 2005 – International Workshop on Operating Systems Platforms for Embedded Real-Time applications

I attended the OSPERT workshop, which I found very interesting. The workshop addressed kernel/RTOS architectures and real-time in general purpose OSes. Three invited speakers presented views on flexible scheduling and Linux as a real-time OS.

MINEMA summer school 11-15/7-2005 Klagenfurt

Av Erik Kuiper

I juli 2005 höll MINEMA en sommarskola i Klagenfurt (Österrike) med temat ”wireless and mobile computing”. Nedan följer en sammanfattning av de föreläsningar och ämnen som jag fann mest intressanta.

Mads Haahr – Middleware for Mobile Computing

Det jag fastnade för i Mads presentation var de fjorton utmaningarna som finns i en mobil omgivning (se tabellen nedan). Utmaningarna är en sammanställning av utmaningar Mads har hittat i olika papper han har läst.

Mobile Device Challenges	Mobile Networking Challenges	Physical Mobility Challenges
Battery Power	Networking Heterogeneity	Address Migration
Data Risks	Disconnection	Location Dependent Information
User Interface	Low Bandwidth	Migration Locality
Storage Capacity	Bandwidth Variability	
Processing Power	Security Risks	
	Usage Costs	

David B. Johnson – Introduction to Ad Hoc Network Routing

David är en av skaparna av ad-hocroutingprotokollet DSR. Han sade att problemet med routing i ad-hocnätverk är att routing informationen alltid kommer att vara inkomplett och gammal. Med DSR som exempel beskrev hur han sedan ett sätt att försöka skapa ett fungerande routingprotokoll för mobila nätverk.

Charles E. Perkins – Ad Hoc Networking in the IETF

Charles är en av skaparna ac ad-hocrouting protokollet AODV och han sitter med i IETF MANET working gropup. Han började med att gå igenom processen inom IETF för att standardisera och godkänna protokoll. Som mycket annan standardisering så är det en långsam och tidskrävande process. Sedan diskuterade han olika problem med routing i ad-hocnät och poängterade speciellt att den metrik som främst används vid evaluering av routingprotokoll, hop count, inte är en bra metrik. Problemet är att den ger preferens för länkar med långa nodavstånd. Problemet med långa nodavstånd är att den fysiska kommunikationskvalitén är sämre och att det är troligt att den totala vägen kommer att brytas strax på grund av nodernas förflyttningar.

PANEL: Ad hoc networking among vehicles

En panel av representanter från olika företag diskuterade vad för nytta man kan ha av ad-hockommunikation mellan fordon. Den mest intressanta slutsatsen var att om trådlös kommunikation skall användas för säkerhetstjänster så måste minst 90% av fordonen stödja tjänsten. Om det idag skulle bli obligatoriskt för alla nya bilar att stödja en tjänst så dröjer det mer än 5 år innan en penetreringsgrad på 90% uppnås.

Travel Report from MPSoC'05

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Introduction

The 5th International Forum on Application-Specific Multi-Processor SoC (MPSoC'05) took place in Relais de Margaux, France from 11 to 15 July 2005. The forum was organised by Ahmed Terraya, Techniques of Informatics & Microelectronics for Computer Architecture (TIMA) Laboratory, France, Hannu Tenhunen, School of Information Technology, KTH, Sweden and Wayne Wolf, Department of Electrical Engineering, Princeton University, USA. The forum serves as summer school for PhD students in SoC related research and discussion platform for industrial researchers in the field. This year's edition was sponsored by European Design & Automation Association and the IEEE Computer Society, IEEE Circuits & Systems Society and IEEE Council on Electronic Design Automation. I attended the Summer School with a colleague, Niklas Lepistö.

The Forum

The forum started with two keynote speeches, "**Digital Media: The New Frontier for Supercomputing**" by Lisa Su, IBM, USA and "**Nomadik: an MPSoC Solution for Advanced Multimedia**" by Alian Artieri, STMicroelectronics, France. There were tutorial sessions on Hardware and Software Challenges in MPSoC. Afterwards there were twelve technical sessions and two business sessions on MPSoC-related issues. The technical sessions focused on hardware/ software programming models and their applications in SoC/ MPSoC, design methods and tools and their applications to SoC, MPSoC and network-on-chip (NoC). My interest in this forum is the focus on hardware development and multimedia applications. The most informative contribution I received at this edition of the forum was the presentations on the IBM Cell Architecture.

The Summer School

At the summer school I met other PhD students. We interacted and discussed many issues, share ideas and exchange addresses. During the coffee sessions discussed politics, culture differences, issues relating to international securities and of course MPSoC research issues. We enjoyed the swimming pool, took pictures and explored the city on bicycles.

Conclusions

It was exciting to be able to dine and wine with the leading researchers in my field. Reading their publications is very informative and educating. But much more than that is to be able to listen to them in a relax atmosphere and be able to discuss the key issues of their research. The summer school provided the opportunity while the French hospitality provided the most conducive platform. There was more than enough wine! It was difficult to disagree with the saying "When in Rome do like the Romans". I had to drink wine like the French while I was in Margaux. To complete the forum we were taken to a wine brewery where we were taught the art of application-specific wine brewing!

Travel Report from MPSoC'05

Niklas Lepistö
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In July 11-15 2005 I attended the 5th International Forum on Application-Specific Multi-Processor System on Chip (MPSoC). MPSoC is a multidisciplinary forum which brings together world class R&D speakers from academia and industry to discuss issues related to Multi-Processor SoC design, and naturally also people like me who are just there to listen and learn. MPSoC 2005 took place at Relais de Margaux near the city of Bordeaux in France.
The trip to Bordeaux went without any problems, but at Bordeaux airport I had to take a taxi to the hotel since I was too late for the bus transport that had been arranged. The taxi driver did not know any English but he seemed to understand where I was headed. I guess Margaux, which was a relatively small village, had already gotten more that it's usual share of visitors that day.

Margaux was slightly further from Bordeaux than I had imagined, and the hotel where the event took place was located 3 km from the village centre, so there was not that much to see or do around the hotel. On the other hand, there wasn't really that much time left after the sessions that started at 8.30 and ended 17.00 each day, followed by a dinner which usually rendered one incapable of any further activities other than discussing more or less MPSoC related matters.

Generally each day was divided into four sessions separated by lunch or coffee breaks. There were two types of sessions, either with two or three longer presentation or five short 12-minute presentations. The sessions with the short presentations proved to be very interesting and varying, although some speakers had some difficulty to squeeze in everything they had to say in 12-minutes. The first day was started off with two keynotes. The first one was by Lisa Su from IBM, who discussed digital media as the new frontier for supercomputing. Su explained the problems and limitations of today's semi conductor technology and stated that in the future increased performance will depend on innovation rather than technology, presenting the Cell processor as an example. The second keynote was presented by Alain Artieri from ST Microelectronics and described the Nomadik Multimedia Processors from ST. The rest of the first day included tutorial sessions, which focused on HW and SW challenges of MPSoC design.

One of the most interesting sessions during the week was entirely dedicated to the IBM Cell processor and included two presentations describing the architecture and implementation of the processor. Another interesting presentation was given by André DeHon on Sub Lithographic Semiconductor Computing Systems, which seemed slightly more futuristic than the other presentations. Many of the presentations during the week pointed out the increasing need for software development tools and programming models for multi processor systems.
The week proved to be very interesting although it was somewhat difficult to stay focused at the end of the week.

Report from RTiS 2005 and ARTES summer-school

Högskolan i Skövde, August 15-19, 2005

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Motivation

"ARTES summer-school and RTiS is a place to meet Swedish researchers and industry involved in Real-Time and Embedded systems research and development. Real Time in Sweden (RTiS) 2005 is a conference intended to bring together industry and academia in an effort to put together and share information about essential and urgent topics in embedded systems and real-time." (By ARTES and SNART)

I came to the present one paper "A brief evaluation and overview of UML2.0 from the viewpoint of embedded control systems", which is a short summary of a technical report.

Highlights

In the first day, Dr. Mike Hinchey from NASA Goddard Space Flight Center (USA) introduced "Autonomic Computing for Real-Time Systems" from his experiences. Dr. Chenyang Lu from Washington University in St. Louis gave a lecture of "Real-Time Issues in Wireless Sensor Networks".

The second and third days are SNART conference time. There are two special sessions 1) Special research sessions on real-time databases and information fusion, testing of event-triggered real-time systems, and sensor networks, 2) Special industrial experience session "Embedded Software for Mobile Terminals"

In the following days, four tutorials (CBSE, Fault tolerance, Execution time analysis, and sensor networks) and the future of IT are presented.

Social event

August 18, we visited Läckö castle and took Boat to Navens Light house. Although it was little chilly, Prof. Sten showed his swimming skill. Beautiful pictures made by Anita, Sten F. Andler, Paul Pettersson and Roland Grönroos are available on the ARTES and RTiS website, where newscasts by TV4 are also provided.

Travel Report from FPL'05

Niklas Lepistö
Mid Sweden University, Sundsvall

Introduction

During 24-26 August I attended the International conference on Field Programmable Logic and Applications (FPL), which is the first and largest conference focused on programmable logic. This year the conference took place in the city of Tampere in Finland and was hosted by the Institute of Digital and Computer Systems of Tampere University of Technology. The venue of the conference was Tampere Hall, a conference centre that was claimed to be the largest one in the northern countries. Tampere Hall was conveniently located, just a few hundred metres from our hotel. Tampere seemed to be a very nice city, especially at night with all the lights and the river flowing through the city. I got some really nice photos.

The conference

The conference lasted for three days and had three parallel sessions. There were also four poster sessions during the conference. Totally 128 papers were presented, many the presentations were in some way related to my area of interest which often made it difficult to choose which session to attend. A keynote presentation with the title "Computing Platform Requirements for Future Mobile Devices" was given by Misha Burich from Altera describing the possibilities with current FPGA technology and design tools. During the last day Peter Alfke from Xilinx gave a tutorial presentation on recent progress and future trends of FPGA technology which complemented the keynote in a great way.

The First day my colleague Najeem Lawal presented his paper on "Address Generation for FPGA RAMs for Efficient Implementation of Real-Time Video Processing Systems".

Generally the conference had many interesting presentations, several presentations involved use of the Handel-C design language which I was very unfamiliar with. The most useful presentation for me was a poster presentation on an instruction set extension for the Xilinx Microblaze Processor.

Representatives from different FPGA and design tool vendors, such as Xilinx, Altera, Synopsys and Mentor Graphics were present during the poster sessions which resulted in many interesting discussions; I also had the chance to find out more about Handel-C from Celoxica, who were there to display their design tools.

Travel Report from FPL 2005

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Introduction

International Conference on Field Programmable Logic and Applications (FPL) is the largest conference in the area of field-programmable logic. Developments in field-programmable logics have made them applicable for implementing large systems and accelerators. They are now employed in environments where hard real-time constraints must be guaranteed and for complex reconfigurable computing. The topics covered include reconfigurable architectures, applications, design methods and tools. Conference discussions usually include industrial applications, advanced electronic design automation (EDA) tools, research applications, novel systems architectures and educational experiences.

The Conference

The 15th edition of the International Conference on Field Programmable Logic and Applications tagged FPL 2005 took place in Tampere, Finland from August 24 to 26, 2005. It was organised by the Tampere University of Technology and co-sponsored by IEEE Circuits and Systems Society, IEEE Finland Section and Academy of Finland. There were two keynote addresses, "Computing Platform Requirements for Future Mobile Devices" by Yrjö Neuvo, Nokia, Finland and "Directions in FPGA Architectures and Design Methodologies" by Misha Burich, Altera, USA. There were ten presentation sessions, three poster sessions and one PhD forum. The most beneficial to me were sessions on Logic Synthesis, Video Processing Applications, Architectures and Systems, Multidimensional Processing and Compilation.

The Presented Paper

In this conference I presented a paper "Address Generation for FPGA Block RAM Accesses enabling Efficient Implementation of Real-Time Video Processing Systems". This paper described two approaches on accessing on-chip FPGA Block RAMs based on the global memory object architecture. A comparison of the experimental results obtained using the two approaches on real-time image processing systems design cases was included in the paper. There were two questions which were well answered and a comment.

Conclusions

I attended the conference with a colleague Niklas Lepistö and we had the opportunities of meeting many FPGA technology researchers. We discussed with both Altera and Xilinx representatives about FPGA memory architecture. Altera offers FPGAs with different memory sizes of a single chip while Xilinx offers only one memory size on-chip depending on the product family. The major reason for this difference is that Altera tends to provide a hardware platform that is more software friendly while Xilinx is dedicated to technology optimization by using single memory architecture per chip. This difference gives room for research opportunities: flexible memory architectures effectively optimised for process technology.

We had an excellent dinner after a nice Viking boat cruise.

Travel Report from APPSEM05

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APPSEM (http://www.tcs.informatik.uni-muenchen.de/ mhofmann/appsem2/) is a thematic network funded by the IST program of the European Union. Its objective is to promote research into application-oriented semantics of programming languages. This years workshop on applied semantics, APPSEM'05, was held 12-15 September 2005 in Germany, and was located at the island of Frauenchiemsee, in the Lake Chiemsee. The geographical location of Lake Chiemsee is approximately right in the middle of Munich and Salzburg. The workshop, as well as its participants, was hosted by the sisters of the Benediktinerorden in their abbey.

Frauenchiemsee is a rather small island, you could easily walk around it in 15 minutes. But despite the size of the island, there was a lot of tourists coming to it, and I think there were 3 or 4 restaurants and a number of "Biergartens" on the island, as well as some souvenir stores. The main attraction is probably the above mentioned abbey though.

The reason for my trip was to present the paper titled "Two Formal Semantics for PLEX", which was authored together with my supervisor (B. Lisper). The paper was presented in a special session devoted to applications of semantics in industrial applications/problems.

As usual (?) there was a mix between interesting, and not so interesting, talks as well as some invited talks. Among the invited speakers were Chris Hankin (program analysis), and Joy Stoy (Bluespec) who talked about how the company had "hidden" semantic technology in their design tool in order to get it accepted by people not familiar (or sceptical) to semantics . . .

My overall impression is that it was a very well organized conference at a very pleasant location, even if took quite some time to get there; my flight departed from Stockholm at 10:45 and I arrived at the abbey somewhere around 18:30 . . . I met a lot of interesting people at the conference, both Phd-students and senior researchers, and the discussions during the meals, coffee breaks, etc. was about all kinds of different subjects such as lambda calculus, protocol specification, German beer, and comics (Tintin and Asterix) :-)

Travel report from Net.ObjectDays 2005

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The conference

Net.ObjectDays is a yearly international conference in Erfurt, Germany. This year it took place September 19–22. The main topics of the conference are software architecture and Internet technologies: Java, .NET, Web services, model-driven architecture, XML... I was there for attending the whole conference, and for presenting our paper *Composing Ad-hoc applications on ad-hoc networks using MUI*, at a workshop called Mobility Aware Computing.

Visiting this conference was very interesting and rewarding indeed. The following are some highlights from the talks:

- The main keynote was by Dave Thomas, who, among other things, is one of the persons behind the Eclipse IDE. He talked about the challenges of application development. His interest now was in so called Very High Level Languages, where skilled programmers write programs for very specific tasks, e.g. at the New York Stock Exchange. These programs live only for a few hours, but utilize thousands of processors at the same time.
- Andreas Raab from HP Research Labs demoed Croquet, a very cool 3D collaboration environment, with an integrated scripting programming environment in the 3D world. Mr Raab explained how they made heavy use of distributed computations. This meant that they could invite almost any number of spectators to a game, as long as these people do not interact, and just look (they perform their own computations).
- Steffen Meschkat from Google talked about Ajax, a technology for building Web applications, where more processing is done at the client side. He discussed experiences from building Google Maps, and demonstrated live over the Internet. The result was impressive, but it was striking that muched seemed to be based on JavaScript, which has been around for quite some time.
- At the Mobility Aware Computing workshop, Gabor Paller from Nokia Research Center presented a paper which I found interesting. It was about a technique for increasing Java performance on resource-constrained devices. The idea was to introduce a new bytecode for explicit memory deallocation. This bytecode was to be inserted by a tool, after data-flow analysis of the program, with the purpose of getting less garbage collection.

The town

Erfurt is the capital of the German state of Thuringia. It has a nice city centre, with many fine buildings from medieval times. These were presented to us at a city tour one night, where we got to see traces from both Martin Luther and the Swedish king Gustav II Adolf. There is a calm atmosphere, in part thanks to the tram network, which means that there are few cars in the centre. I also experienced some cultural differences, compared to Sweden. E.g., at McDonald's, the staff came around to the tables, serving coffee after the meal. Very nice!

Pavel Krcal December 6, 2005

I have attended FORMATS'05 conference, Uppsala (September 2005). This conference is focused on the formal verification of timed systems. The invited speakers, however, were chosen so that they represented an applied real time research. Lothar Thiele (ETH Zurich) presented arrival curves and their applications in hard real time scheduling. Karl-Erik Arzen (LTH Lund) talked about real time problems in control theory and presented several simulation tools. The most interesting papers were (among others)

- Average Reward Timed Games by Bo Adler, Luca de Alfaro, Marco Faella

- Quantifying Similarities Between Timed Systems by Thomas Henzinger, Rupak Majumdar, Vinayak Prabhu

The first one deals with an analysis of the average behaviour of systems with an uncontrollable environment. The other one proposes a measure on timed systems to express how similar they are using game theoretical concepts.

Travel report from Munich
Olga Grinchtein, Uppsala University, Sweden

In 1-10 December I visited Institute for Informatik, Technical University, Munich.
I worked with Dr. Martin Leucker on the journal paper "Inference of Event-Recording
automata". The research interests of Dr. Martin Leucker are formal methods in software engineering,
parallel model checking, testing and model learning.
I also gave a talk "Inference of Event-Recording automata using Timed Decision Trees" on the seminar.
The seminar was successful. I got a lot of interesting questions.

Travel report from GAMES'05
Olga Grinchtein, Uppsala University, Sweden

I have attended GAMES-Meeting 2005 that was held in Paris, September 21-24.
GAMES is a Research Training Network funded by the European Comission under the Fifth Framework Programme.
The collaboration involves seven European universities and one from the US.
There is a growing need for formal methods that guarantee the reliability, correctness, and efficiency of computerised systems.
This project adresses this challenge by developing specification and validation methodologies that are based on games and automata.
Oriented at both foundational research and modern applications, this network aims to provide a novel set of techniques for the synthesis and validation of computing systems.
Uppsala is also participated in network.
The scientific programme of GAMES'05 consisted of contributed talks on the research tasks of the GAMES network and three invited tutorials:
Mihalis Yannakakis (Columbia University): Testing, Optimization, and Games ;
Hubert Comon-Lundh (LSV, ENS Cachan): Automatic Verification of Cryptographic Protocols;
Marcin Jurdzinski (University of Warwick): Algorithms for Solving Stochastic Games ;
I also gave a talk "Inference of Event-Recording automata". This is work was done in collaboration with Bengt Jonsson and Paul Pettersson.

Report from ATIST 2 Summer School on

Component & Modelling, Testing & Verification, and Statical Analysis of Embedded Systems

Nässlingen, Sweden, September 29 - October 2, 2005

Motivation

This 4 days summer school is held at Nässlingen, a small and old archipelago homestead, located about 50 km north east of Stockholm. The summer school aims to provide a forum for young researchers in the fields of modelling, validation and performance analysis of embedded systems as well as industrial engineers with practical background in design and testing of embedded systems.

A number of foundational tutorials accompanied by a selection of exiting new emerging technologies were given by leading scientific experts in three domains: Modelling & Components, Testing & Verification and Compilers & Timing Analysis.

Highlights

The most interesting tutorial for me is in the modeling cluster. Ileana Ober gave a tutorial about UML/UNL2.0, which presents the major features of UML, with focus on system and components modelling of structure and behaviour. However, not much about UML 2.0 was introduced due to the time restriction.

Pierre Alain Muller and Reiko Heckel presented “Foundations of Model Transformations” and “Applications of model transformations”, where the basic concepts of graph transformation was introduced by mean of an example followed by an discussion of different applications.

Other presentations are also good but out of the scope of this report. Please see http://www.artist-embedded.org/FP6/ARTIST2Events/SummerSchools/Artist05.html for detailed information of presented tutorials.

Activities

As mentioned, Nässingen is a small island combined old characters and modern fashion. Row-boat attracted many participators interests. Dinner on Gistholmen was full of happiness. Groups from Sweden, China, German, Italy, France and other countries sang typical songs. The Tai Ji show got many interesting feedbacks.

Experience Learnt:

Check map very carefully if you take bus. The table on the bus stop at Åsättra is not complicate but easily leads you to the opposite direction. I had to walk half hour and fortunately were driven to the port by a kind lady.

Travel Report from NWPT05

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The NWPT series of annual workshops is a forum bringing together programming theorists from the Nordic and Baltic countries (but also elsewhere). The scope of the workshop is to cover different aspects of program theory, and my impression is that this is a suitable ”first workshop” for a Phd-student working in this area, since it is allowed to submit work that are to appear in formal publications elsewhere, as well as work in progress.

This year, the workshop was held in the second half of October (19-21), hosted by the University of Copenhagen. The *August Krogh* institute, where the workshop was held, is located in Universitetsparken, which is approximately 10 minutes by bus (or a 30 minutes walk) from central Copenhagen.

Traveling to Copenhagen was very convenient, the flight from Stockholm took one hour and the train from the airport to central Copenhagen took approximately 15 min. The only negative thing with the journey was my choice of hotel; I had managed to find a hotel that was not close to, but exactly adjacent to one of the railway stations. I had the first track right below my window!

My contribution to the workshop was a paper titled ”Formal Semantics for PLEX”, which was a summarized version of a paper presented in September at the APPSEM05 workshop. The paper was presented on the first day of the workshop which meant that I didn't have to spend some of my time (during the workshop) preparing for my own presentation.

The program was organized in a number of blocks, where each block was divided in parallel sessions. The invited talks were given at the beginning of the blocks, before the parallel sessions started. This was actually my first conference/workshop where the presentations was divided in parallel sessions. The advantage is that more presentations can be accepted, but at the same time it can be a problem if you want to attend two talks at the same time. Lucky enough, I didn't find myself in such conflicts during the workshop.

My overall impression is that the organizers really had made an effort in considering peoples traveling plans since the workshop started after lunch on the 19:th, and the final sessions (on the 21:th) ended before lunch.

ARTES++ Travel Report from

FACS 2005

International Workshop on Formal Aspects of Component Software

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Uppsala University, Department of Information Technology

December 22nd, 2005

The FACS 2005 workshop was held October 24-25, at UNU-IIST (the International Institute of Software Technology of the United Nations University), in Macao, China. Macao is a former Portugese colony west of Hong Kong, mostly known for its gambling opportunities.

The objective of FACS 2005 was to bring together researchers in the areas of component software and formal methods to promote a deep understanding of this paradigm and its applications. Most participants where well versed in formal methods, using for example process algebra, algebraic specifications or timed automata.

Presentations

The first speaker of FACS 2005 was Mike Reed, the director of UNU-IIST, who gave an introduction to the institute and UNU. The mission of UNU-IIST is to help developing countries strengthen their education and research in computer science and their ability to produce computer software.

Farhad Arbab was there giving a presentation of Reo, a coordination model for component composition. The model is very powerful, enabling intricate coordinations to be assembled using a small number of basic connectors. A concern is of course if

such complex connectors are needed, and what cost is associated with this complexity. Another presentation described Reo connectors as being for components what transistors are for computer hardware.

The trend was towards distributed business applications and web services, where dynamic reconfiguration was discussed as a must in order to be called a component model. In all this, my presentation of an analysable component model for real-time systems (SaveCCM) was quite different.

Recommendations

The focus of FACS is quite narrow, so you will probably not consider it unless you are working with formal methods in a context of component software. If you are, the workshop could be worthwhile as you meet other researchers with similar interests.

The workshop proceeding will be published in ENTCS, Electronic Notes in Theoretical Computer Science (Elsevier).

The workshop website

`http://www.iist.unu.edu/facs05`

Travel Report for IEEE NORCHIP 2005

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Introduction

The NORCHIP conference the main microelectronics event of the Nordic countries. Conference topics usually cover all areas of microelectronics (both digital and analogue) thus providing a large platform for collaboration among researchers in different fields but related to microelectronics. The conference provides an annual forum for presentations and discussions of advances in design and prototyping of VLSI circuits and systems and focuses on design concepts and results, verification, prototyping and testing of VLSI systems.

The Conference

This conference sponsored by the IEEE Circuits and Systems Society and the University of Oulu took place at Oulu, Finland on 21-22 November 2005. The focus of this year's conference was radio frequency (RF) technology. The keynote speech "Digital RF processors for Cellular Radios" was given Dirk Leipold, Texas Instruments, USA. I presented a paper at this conference. There were sixteen presentation sessions and two poster sessions.

The Presented Paper

My paper "Embedded FPGA Memory Requirements for Real-Time Video Processing Applications" was presented as a poster since it was not directly related to RF technology which is the subject of the conference. The paper is an analysis of the current and future requirements of video processing systems allocated on FPGA embedded memory resources and concludes that FPGAs should support multiple memory sizes to take full advantage of the architecture. The analysis was performed such that a set of video processing systems are allocated onto different existing and extrapolated FPGA architectures.

Conclusions

Although the conference is for Nordic countries there were researchers from all parts of the world. I met Arnaldo Azevedo from Brazil whose work is related to mine and we had excellent discussions on the challenges related to efficient use of FPGA embedded memories in video processing. I found the technical sessions on logic circuits and digital application to be very informative. Also I found discussions during the poster session very practical and personal since only researchers whose works are closely related and who are really interested in a poster come forward to ask questions. There is always enough time for a one-on-one discussion and opportunity to present their arguments. There is also enough room for people to explain why the suggestions would contribute to the work in the poster. I had the privilege of having intensive discussions with two people.

Travel Report from NORCHIP'05

Niklas Lepistö
Mid Sweden University, Sundsvall

Introduction

In November 21-22 I attended the NORCHIP conference with several of my colleagues from Mid Sweden University. NORCHIP is an anual microelectronics conference which is usually organized in the Nordic countries, it covers all areas of microelectronics from analog and RF to digital design. The NORCHIP 2005 conference was held at the Radisson SAS hotel in Oulu, Finland.

The trip

Since there were no direct flights between Sundsvall and Oulu we had to travel through Stockholm and Helsinki with a total of three flights, which resulted in a lot of time spent at the airports. After spending 8 hours travelling we finally ended up in Oulu, about as far from Sundsvall as the distance covered by the shortest of our three flights.

Oulu is the largest city in northern Finland and has a population of about 120000. The city is located at the Gulf of Bothnia and is approximately at the same latitude as the Swedish city of Skellefteå. This year happened to be the 400th anniversary of Oulu, not that I would have noticed it without someone telling me. I was slightly disappointed with the weather; there was no snow at all and it was far too warm for northern Finland.

The conference

The conference lasted for two days and had two parallel sessions, one for analog electronics and the other for digital electronics, there was also a poster session held each day. Totally about 70 papers where presented during the conference. The first day started of with an opening speech by Timo Rahkonen from the University of Oulu followed by a keynote speech on Digital RF processors by Dirk Leipold from Texas Instruments. The keynote was one of the most interesting presentations on the conference and gave a relatively technical (for a keynote) description of Texas Instruments chips for software defined radio.

At the end of the first day I presented my paper, "High-Performance FPGA-Based Camera Architecture For Range-Imaging", it was my first "real" presentation and afterwards I felt that I probably should have used that extra time at the airport for rehearsing. On the second day my colleague Najeem Lawal had an interesting poster presentation on Embedded FPGA Memory Requirements for Real-Time video Processing Applications. Another presentation among the most interesting ones was on Semi Floating Gate A/D converters presented by René Jensen from Oslo University. To my surprise the analog electronics sessions which I attended proved to be more interesting than many of the digital sessions.

Report from the 3rd Swedish National Computer Networking Workshop 23-24 November 2005

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November 30, 2005

1 Venue

The 3rd Swedish National Computer Networking Workshop (hereafter SNCNW) was held in Halmstad, which is located on the west coast of Sweden. The workshop took place at Halmstad Högskola.

2 Workshop

The aim of SNCNW is to bring researchers in Sweden within the area of computer communications together. The workshop gives opportunities to present current research within its early stages. Another important aim of the workshop is to discuss new wild ideas and to find new partners for collaboration.

My contribution to the workshop was to present a work on how active network measurements affect the performance of TCP. Using active network measurements one can obtain an estimate of the available bandwidth between two nodes in a network. Soft real-time systems that depend on the available bandwidth can use the estimate in order to adapt and adjust the send rate to the current conditions. For example, a tool that is streaming live TV to viewers over a network (e.g. the Internet) adjusts the send rate by changing the quality of the stream. A lower quality requires less available bandwidth.

Other interesting work presented at SNCNW was, for example, the following:

- a work on how to improve the estimates of the available bandwidth on an end-to-end path by adjusting parameters in the estimation algorithm. The method in focus of this work estimates the available bandwidth in real time.

- a work that discussed quality of service for ad-hoc multicast communication.

- a work that discussed scheduling analysis to support real-time services over standard switched Ethernet.

One social event was planned for the researchers attending SNCNW. It was a workshop dinner on the 23rd of November. Great food, wine and company!

3 Experiences

Oral presentation of research results is always an important exercise and experience, even though it may be a bit nervous. This is my 5th large presentation (in English) of research results. It seems that, and I surly hope that, I manage to give better and better presentations. The questions asked after the presentation also gives feedback on how well you managed to explain your research.

Another experience from the workshop was that it seems important to have a local Swedish workshop dealing with computer communications. SNCNW is a great place for new researchers to try their wings and to get feedback from a comparatively friendly audience.

ARTES Travel Report:

Embedded Real-Time Systems Implementation Workshop
in conjunction with the
26th IEEE International Real-Time Systems Symposium
December 5-8, 2005 Miami, USA

Anders Möller
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Introduction

The main goal of my trip was to present a research paper at the Embedded Real-Time Systems Implementation Workshop, a workshop focusing on future techniques and directions in the embedded real-time community. However, since the conference was co-located with the famous International Real-Time Systems Symposium I decided to stay for a few extra days.

The conference took place at the Eden Roc Hotel in Miami Beach, in the sunny state of Florida USA.

ERTSI

This workshop seeks to identify the open issues and key future research directions in the area of embedded real-time systems. The workshop was based on 30 minute paper presentations followed by "round-table" discussions. However, not very many people attended the workshop – and, hence, the discussions were not as interesting and focused as I had expected.

I presented the paper: "Industrial Grading of Quality Requirements for Automotive Software Component Technologies". The presentation was followed by 15-20 minutes discussions about the results and contributions. Overall I am satisfied with the presentation and the following discussions.

There were a few interesting presentations about component-based development and enhanced quality of service for embedded systems, and at the end of the day, Daniel Mosse from the University of Pennsylvania, Tarek Abdelzaher from the University of Virginia, Chris Gill from Washington University, and Luis Almeida from Universidade de Aveiro concluded with 10-15 minutes presentations about future research areas and open questions. This part was very interesting and gave rise to interesting discussions and some new ideas.

RTSS

The Real-Time Systems Symposium (RTSS) is a very competitive and tradition-bound conference, and the main focus is on scheduling and schdulability analysis. However, RTSS provides a forum for the presentation of high-quality, original research covering all aspects of real-time systems design, analysis, implementation, evaluation, and case-studies.

From my point of view this conference is interesting but far too theoretical. It is indeed interesting to attend the presentations, but I am doubtful about the actual usefulness of many of the topics discussed. Hence I preferred the less competitive and much more applicable discussions during the ERTSI part of the conference.

Miami Beach

Miami Beach is an interesting place. It is a somewhat fancy and exclusive area, but at the same time pretty tacky. My understanding is that not many people live in this area; it is all covered with five-star hotels, restaurants and bars – culminating at Ocean Drive (a beach-strip with hotels, clubs and bars on one side and the beach on the other).

The conference was located at the fancy and beach-front Eden Roc Hotel (see the picture below) about 2 km north from Ocean Drive.

The scenery from the Eden Roc Hotel

Conclusions

My impression from this trip is that the most important aspects going to a conference is the meetings with new and interesting people. I spend a lot of time discussing future research with researchers both from Mälardalen University and from other universities around the world.

The ERTSI conference was interesting, especially the fruitful discussions following the paper presentations. The RTSS was interesting but a bit too theoretical for me.

Overall, I had a great time in the US and after coming home I am more focused then before on my research.

Pavel Krcal December 6, 2005

I have spent a month on a research stay at the National University of Singapore in the group of P.S. Thiagarajan. I have mainly worked on the synthesis of time bounds for Timed Petri Net models there. Other research topics were scheduling with quality of service requirements and schedulability with the processor availability information.

The synthesis problem for Timed Petri Nets I have studied there was motivated by the design of the integrated circuits, where the timing constraints become a key issue. From the theoretical point of view, the hope
for a synthesis algorithm was based on a recent paper by Madhusudan, Thiagarajan, and Yang (P. Madhusudan, P.S. Thiagarajan and Shaofa Yang, The
MSO Theory of Connectedly Communicating Processes, FSTTCS'05). The authors identify a class of distributed systems for which the controller synthesis problem is computable in this paper (otherwise, the controller synthesis problem is not computable for many distributed systems). The goal was to show that a new notion of K-fairness gives us a property making timing constraints synthesis computable. However, it turned out that this notion is
not sufficient and we would need a stronger notion.

Other research directions I have met in Singapore are formal analysis of hybrid systems and scheduling. The motivation for the research in formal analysis of hybrid systems is that the current models enable for behaviours which are unrealistically detailed. Therefore, the goal is to limit these behaviours while preserving a reasonable modeling power. Results of this research have been recently published in several papers at HSCC conference (e.g., Manindra Agrawal, Frank Stephan, P.S. Thiagarajan and Shaofa Yang, Behavioural Approximations for Restricted Linear Differential Hybrid Automata, HSCC'06).

A novel method for scheduling investigated in Singapore is to transfer methods and results from the electrical engineering community, namely analysis of systems using arrival curves. The research group has defined a new class of discrete time automata - event count automata - which extends the notion of the arrival curves with state information. This approach is being experimentally evaluated for quality of service scheduling for multimedia streams. The seminal paper introducing event count automata is Samarjit Chakraborty, Thi Xuan Linh Phan, and P.S. Thiagarajan, Event Count Automata: A State-based Model for Stream Processing Systems, RTSS'05.

Travel Report from Monash University Melbourne, Australia

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Introduction

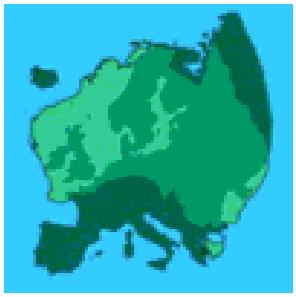
After presenting my Licentiate Thesis I decided to go abroad for some time, and after reading the following (true or not) I was determined were to go…

> *"Australia has some of the best natural scenery, the weirdest wildlife, the most brilliant scuba diving and snorkeling, the best beaches, the oldest rainforest, the oldest human civilization, the best wines, the best weather, the most innovative East-meets-West-meets-someplace-else cuisine - all bathed in sunlight that brings everything up in Technicolor."*

Hence, after some initial discussions with Prof. Heinz Schmidt at Monash University, and with my supervisors at Mälardalen University, I was on my way down-under.

Australia – The Country

Australia is huge. All in all, Australia covers more the 5 % of the world's area, or over 7.680.000 sq km (i.e. 17 times Sweden, see the figure). The coastal line of Australia is over 34.000 km (to be compared with the equator that is 40.000 km). The climate in the southern part of the country (i.e. the coldest areas) is approximately the same as in the southern part of Europe. These are some reasons why I think Australia is so fantastic; plenty of free space, never too crowded, wonderful beaches and beautiful weather.



Comparing the size of Australia with western Europe

Australia – The People

Australia is like a huge melting-pot. People from all over the world, however mainly from Europe, have immigrated over the last centuries. Together with the nice and sunny weather, the far-flung beaches, the wildlife, the rainforest, etc., etc. this makes Australia the perfect place to live with the most relaxed, jet hard working, and open minded people I have ever met.

Melbourne – The Most Livable City in the World

Melbourne is rated by The Economist Intelligence Unit as the world's most 'liveable' city. And I must say that I tend to agree…

The most livable city in the world

Melbourne is a city with about 3.4 million people (of which 66% were Australian-born). The land-size equals greater London – meaning that the city is very wide spread.

Monash University

Monash is Australia's most internationalised university. It has eight campuses including one in Malaysia and one in South Africa, and centres in London, UK and Prato, Italy. Monash has more than 53,000 students from over 100 countries, speaking almost 100 languages. In total, Monash has 75 research centres and more than 2400 academic staff publishes some 5000 research works annually.

During my stay, I worked together with Professor Heinz Schmidt and Doctor Ian Peake, both at The Monash University Centre for Distributed Systems and Software Engineering. This centre aims at advancing foundations, methods and practice of distributed systems and software engineering. The centre focuses on methods and tools for modelling, analysing, constructing and maintaining large distributed software systems. Areas of particular interest are component technology, software architecture, mobile systems, distributed databases, cluster computing and adaptive networks.

Mainly, I was cooperating with Doctor Ian Peake within the project called Extra-Functional Consistency and Prediction for Component-Based Control Systems (eCAP-CBCS). The project develops and implements a new model for prediction and consistency checking of extra-functional, i.e., quantitative software properties (such as worst-case time, space complexity and reliability) relevant for software components in distributed real-time control systems. The objective of the project is to enable cost effective embedded control system design by modelling and predicting extra-functional properties, without needing to produce expensive prototypes.

Our work efforts main contribution is summarised in the research paper: *Component-Based Context-Dependent Hybrid Property Prediction*. In this paper we present a method that enables resource-efficient component-based control software by extending hybrid property prediction methods (i.e. combining static and dynamic techniques) to be context-dependent, enabling less pessimistic extra-functional component property predictions and, hence, improved resource utilisation.

Living Abroad

The time I spent in Australia was really challenging (new environment, new friends, new colleagues, etc.) but overall – it was great fun! I really recommend spending some time abroad.

TRAVEL REPORT FROM UNIVERSITY OF MELBOURNE

ANNMARIE ERICSSON
UNIVERSITY OF SKÖVDE
SWEDEN

1. Introduction

This report describes my research visit at University of Melbourne between 27 October and 15 November 2005. During my stay in Melbourne I worked with Dr. James Bailey at the Institute of Software Engineering at Melbourne University in Australia. The trip was funded by ARTES ++.

2. Motivation

My research is about analyzing rule based real-time systems. Since I am working in the research group for Distributed Real-Time Systems in Skövde, I have good support concerning the area of real-time systems in my home University. Dr. Bailey has done a lot of work in the area of formal analysis of rule based systems and his knowledge is a good complement to my current supervisor group.

3. Research Experience

I was very well received by Dr. James Bailey and his group and especially by James who helped me a lot with my research work, Elsa who showed me around and by Dr. Amy Unruh with whom I shared office during my stay in Melbourne.

During my first week at Melbourne University I was listening to several talks of Honor (Bachelor degree project presentations basically). Australia has the opposite seasons to Sweden so their long summer vacation starts in November and last over Christmas and the first week in November is an examination week. The University was kind of deserted the following weeks since all students went on summer vacation.

I got a lot of feedback considering my thesis work by Dr. Bailey who really took the time to help me and pointed out weaknesses in my project that I had not foreseen. We identified the outline for a paper that will be produced in the future.

I packed a lot of future work in my bag home. I do not regret this trip and I am thankful to James and ARTES ++ who made it possible. The trip to Melbourne gave me a lot of new ideas, new inputs to my project and increased motivation for working on my project.

4. Melbourne

There are at least four universities in Melbourne and University of Melbourne is the biggest of them. (And the very best according to the very objective view of some of the staff at Melbourne University.)

Although Melbourne is a big city with 3.5 million citizens, it has the feeling of a small city. It is rather a set of several suburbs than one big city. Even though I only had 10 minutes walk from the very center of Melbourne it did not feel like if I

was in a very big city. It is also appealing that they have a local holiday because of a horse race (1 Nov. every year is Cup Day). Being a horse freak I immediately felt like home. The scariest thing in this town is the traffic since all of them is driving on the wrong side of the road and in the middle of the mess there are trams and they don't stop for anything in their way.

FIGURE 1. The citizens of Australia are nice and friendly.

5. SUMMARY

My visit to Melbourne University gave me invaluable input to my research project and the exciting experience of close meetings with kangaroos, koalas and small penguins. This is a trip I would like to do again (if my kids allow me to go again). However, next time I will remember to bring earplugs since it is a very long flight and it is even longer when small children are crying in a seat nearby all the way from Shanghai to London.

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Industry Visit Report: Ericsson AB, Stockholm

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Introduction

During the period fall 2004 - 2005, I have spent approximately 1 day/week at Ericsson AB in Älsjö, Stockholm. The site in Älsjö is, among other things, responsible for the development and the maintenance of the software in the AXE exchange system. I don't think that Ericsson as a company need any further introduction.

The project that I am involved in, deals with adapting software written for sequential architectures to parallel hardware. This is carried out together with people from Ericsson, and I also have two of my (assistant) supervisors at the company.

The purpose of my visits

The main reason for the "trips" during the fall of 2004 to the summer of 2005 has been to document (by a formal semantics) the language PLEX, which is used to program the functionality in the AXE system. In this work, we have looked at both the current sequential implementation/architecture, as well as an experimental implementation/architecture. The work has been carried out together with my supervisors at Ericsson, and we have also reported on the developed semantics in a paper presented at the APPSEM'05 workshop [1].

The visits has continued this fall (2005), and the purpose is now to perform inspection of the current software in order to get an opinion on how well the existing code is suitable for parallel processing, i.e., trying to identify those parts of the software that are suitable candidates for concurrent processing. In order to determine this, i.e., to get an opinion on the suitability, we look at how the shared variables in the system are used, and if there are any potential problems/conflicts. This has already been discussed, in theory, in a master thesis project at the university [2], and the main purpose of our current activities is to get an opinion on the actual frequencies of the potential problems discussed in this master thesis. The result of this study is planned to be published in a Technical Report, and perhaps also in a forthcoming conference/workshop paper (as a case study).

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Report from Industry Visit in VCC at Göteborg

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Motivation

The motivation of the industry visit in VCC (Volvo Car Corporation) is to investigate and study the current industrial problem and tendency regarding model based tool integration at complex mechatronics products development, and thus to identify the needs and requirement following by analysis, and new framework and work procedure development.

Interviews

I had couple of interviews with people working in different department at VCC, covering electrical functions, architecture design, infoentertainment and so on. This helped me to know the situation of model based development and information management at VCC. Near 10 participators provided lots information.

Workshop

The first workshop on 21st January was hold at VCC. Participators were from VCC, Systemite, CTH/IVF, and KTH.

The workshop was divided into two parts: state of art and research projects introduction. In the workshop, projects MBEED/EEDS and Model management motor control from Volvo, Integrated product development from CTH/IVF, Scania Case Study, Aida2 and truck development from KTH were introduced.

On the second workshop, the summary of the interview was presented.

More information could be found at http://www.md.kth.se/RTC/modcomp.