Travel Report from EUROMICRO'99

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About the Trip

The purpose of the trip where to visit the 11:th Euromicro Workshop on Real-Time Systems, held in York, June 9–11, 1999. The Euromicro workshops on Real-Time (RT) Systems are among of the leading conferences within the RT research area with a lot of interesting papers and a chance to meet prominent researchers.

York is, except being the city the conference where held at, one really beautiful and historically well-preserved English city. The visit let us also to get in contact with some of the researchers from the well-known York RT Systems group as well as the RT Operating System vendor company Northern Real-Time Group (NRTG).

About The Conference

There where 88 papers submitted and 34 papers accepted for publication (not counting the work-in-progress papers) this year. I really felt that the quality of the papers had increased since the previous year when the conference where held in Berlin.

Interesting Papers

Since my work is focusing on Worst Case Execution Time (WCET) analysis, I was mostly interested in articles on this topic. Unfortunately there where only one WCET article presented in the conference [4]. The paper where more on Statechart modeling then on WCET analysis. Though its was an interesting paper but didn't added anything particular to the WCET research. The conference did though give opportunity to get in contact with researchers within different WCET groups, see below.

A somewhat WCET related paper is the article by Puschner and Burns [6] where they evaluated how well different sorting algorithms behaves if they are stopped before the sorting where completed. Interesting paper but made using measurements instead of static analysis.

There where a lot of scheduling papers or scheduling related papers presented (in my view far to many). Papers worth mentioning is the work by Bates and Burns [1] on how to assign attributes to tasks (which will later on be used in the schedulability analysis), the work by Aldarmi and Burns and some papers by Butazzo and his coauthors.

A very nice introduction to real-time computer technology in the field of automotive electronics where given by the invited talker Herman Kopetz [5]. According to him the automotive industry is moving towards putting more and more computers and wires in their cars. Both the reasons for this X-by-wire tendency as well as the new forecoming problems of this development is discussed in more detail in his article. The article is a good complementary reading material which can be given for students taking a RT course.

The Conference Place

The conference where held in one of the older university building really close to city center (and to my hotel). This meant that the surrounding where very nice but when a multitude of people where gathered in the same conference room it was quite hard to see the overhead screen and the humidity became very high. The guys in charge also insisted to serve the lunch without any chairs or tables (as in Euromicro'98 in Berlin). I think this is made so that the conference participants should be forced to talk to each other, but is really just stupid because you can not really talk to someone when you are standing with one plate in one hand, a glass in the other hand and your mouth full of food. For the Euromicro conference in Stockholm, KTH, I really hope that the organization committee decide to use tables and chairs.

The Participants

Almost the complete European Real-Time community where present. Well-known names like Burns, Wellings, Buttazzo, Stankovic and Puschner where all there. There where though less Americans there compared to eg. RTSS. Worth mentioning is that the Swedes where the largest group of researchers (maybe due to financial support from ARTES). The number of Swedish participants clearly exceeded the people from Great Britain. I wonder how many Swedes there will be at KTH the next year?

During break between sessions and lunches I had the opportunity to talk to some people within the WCET research area:

- *Peter Puschner* had performed a lot of WCET related research in the past and still have a lot of interesting ideas. He is now, together with Alan Burns, the supervisor of a special issue WCET for the Journal of RT Systems which we have submitted an article to [3]. Will probably not perform any deeper WCET analysis in the nearest future.
- *Ian Bate* is starting a project in York which will perform WCET analysis on Ada. Jakob and I gave him one of our technical reports and had really nice discussions on problems of timing lower-level hardware issues.
- *G. Bernat* is starting a project in York which will try to perform WCET analysis on Java byte code. Compared to Bate will Bernat more focusing on the timing of higher language level constructs. Both Bate and Bernat (which where not working in the same project at all) where looking forward to have more research exchange with our WCET group in Uppsala.
- *Edwin Erpenbach* had done some work with Peter Altenbernd. It seems like the most work within the WCET area in the Paderborn group will be made by Friedhelm Stappert. Except the cooperation we already have with Peter Altenbernd, Friedhelm will be visiting us for 10 days in August (during the ARTES week) to see if we can do some work together.

About the Meeting with NRTG

A meeting where arranged with people from Northern Real-Time Group (NRTG). Their current OS version SSX5 is one of the smallest and fastest predictable RT OS today, with overheads of just 800 bytes of ROM and 90 bytes of RAM for a typical system of ten tasks. The OS has true support for real-time behavior and aimed towards embedded systems RT market. SXX5 is used in the new Volvo S80 [2].

The reason for the meeting where to discuss NRTG:s plans of integrating WCET analysis in their developing workbench. The vice-president at the company, prof. Ken Tindell is well-known in the RT business and has been working at DoCS. Ken first showed us the WCET prototype they have made and after that I gave an one-hour presentation (including discussions). Compared to our ideas for doing WCET analysis they have no control of the compiler and therefore have to do the timing analysis directly on the assembler code. We convinced them to use a Implicit

Path Enumeration Technique (IPET)-based (see eg. [3]) instead of a Tree-based technique for portability reasons.

We where also able get an older version of their RT OS. This will be used in the Wait-Free project for integrating some of wait- and lock-free features in the OS.

About York

York is a city which tries to keep its historic atmosphere intact. This means that many old building are restored (especially the city center), there is an almost complete city-wall, a lot of churches and, of course, many, many tourists.

The city where first built by Romans, conquered, rebuilt and renamed (York comes from Jorvik) by Vikings (they have a nice Viking museum which I visited on my last day in York). I really liked walking around in the town seeing the mixture of old buildings and the modern tourist crap sold in shops. They also had a number of really nice pubs where a lot of English Ale and Stout where served. I can really recommend a trip to the town for anyone who is planning to visit Great Britian as a tourist.

References

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