

Report on Visit by Tim Harris as SICSA Distinguished Visitor:

Tim Harris visited the School of Mathematical and Computer Sciences, Heriot-Watt University, on Tuesday May 7th. During this visit Tim had discussions with several members of the Dependable Systems Group, in particular on issues in the area of systems for parallel computation, such as advanced runtime-system support, integration in modern operating systems such as Barrelfish, and high-level language support for parallelism, which is one of the focus areas of our group. Particularly useful were the discussions on operating system integration of support for parallelism and references to ongoing work on parallelism benchmarks, which aligns well with our own effort on the SICSA MultiCore Challenge.

On Wednesday May 8th, Heriot-Watt University hosted the MMnet'13 Workshop on Language and Runtime Support for Concurrent Systems (for details see: <http://www.macs.hw.ac.uk/~dsg/events/mmnet13.html>). This was the twelfth instance of a series of workshops of the EPSRC-funded UK Memory Management Network, which was established in 2002 and typically organises one workshop per year, as recorded on its web page (<http://www.mm-net.org.uk/>). For this instance we had a total of 32 registrations, mostly from the UK but also two participants from Paris, France, and one speaker from Codeplay Software, Ltd, an Edinburgh-based company specialising on compiler and tool support for heterogeneous, massively parallel hardware. The programme of the workshop featured 10 talks in total, some of them presentations developed for other high-profile venues. MMnet'13 itself was not refereed, but links to the slides and in some cases papers on the presented topic are given on the main web page.

Tim Harris visited the compiler and architecture group at Edinburgh University on Thursday 9 May 2013. Tim gave a presentation for our ICSA colloquium series titled "Rethinking the stack for distributed runtime systems" (abstract below). Throughout the day we arranged several meetings with researchers from our institute. For instance Vijayanand Nagarajan discussed his work on synchronisation and Tim's work on runtime systems for parallel codes. Chris Fensch discussed Tim's work on the Barrelfish OS scheduler and on the performance degradation of concurrent program using standard scheduling techniques. They also talked about the possibility of establishing a collaboration by sending Alex Collins (a PhD student) for an internship at Oracle in Cambridge later this year.

Schedule for Tim Harris' Visit:

Monday May 6th: Travel & arrival in Edinburgh

Tuesday May 7th: Visit Heriot-Watt; Host: Hans-Wolfgang Loidl

Wednesday May 8th: MMnet'13 workshop at Heriot-Watt:
<http://www.macs.hw.ac.uk/~dsg/events/mmnet13.html>

SICSA Distinguished Visitor Tim Harris will give the following talk as part of the MMnet'13 workshop:

Rethinking the stack for distributed runtime systems

Tim Harris
Oracle Labs

Wed 8.5. 11:00-11:30
Room 1.82, Earl Mountbatten Buildings
Heriot-Watt University, Riccarton

MMnet'13: Language and Runtime Support for Concurrent Systems
<http://www.macs.hw.ac.uk/~dsg/events/mmnet13.html>

Abstract:

Cluster computing is becoming increasingly important because the size of workloads continues to grow faster than the size of individual machines. In this talk I will argue that:

- * The resource demands of emerging workloads (e.g., distributed Graph analytics) look different from software traditionally deployed on clusters (HPC and distributed/replicated servers).
- * With jobs spanning multiple machines, no individual system is in control of traditional OS functions such as scheduling and resource management. This leads to poor interactions (e.g., where cluster-wide scheduling of jobs to machines is unaware of the exact load on individual machines) and wasted resources (e.g., if machines or VMs are statically assigned, but resources go unused).

I will describe some of the trends I am seeing, and research directions I am exploring in the design of distributed runtime systems. This is an informal work-in-progress talk - feedback very welcome.

Venue

Venue is Heriot-Watt University, Riccarton, Earl Mountbatten Building, Room G44. It's building 2 on the map below, with entrance from Boundary Road North
http://www.macs.hw.ac.uk/~hwloidl/hw_map_colour.pdf

Best connection from the centre is Bus 25 to Riccarton, which stops just in front of the reception at the univ, or Bus 34, which stops in front of the dept.

Thursday May 9th: Visit Univ Edinburgh; Host: Christophe Dubach

Talk: Tim Harris

Date & time:

Thursday 9 May, 2-3pm

Venue:

Edinburgh University, Informatics Forum, 4.31/4.33

Title:

Rethinking the stack for distributed runtime systems

Abstract:

Cluster computing is becoming increasingly important because the size of workloads continues to grow faster than the size of individual machines. In this talk I will argue that:

* The resource demands of emerging workloads (e.g., distributed Graph analytics) look different from software traditionally deployed on clusters (HPC and distributed/replicated servers).

* With jobs spanning multiple machines, no individual system is in control of traditional OS functions such as scheduling and resource management. This leads to poor interactions (e.g., where cluster-wide scheduling of jobs to machines is unaware of the exact load on individual machines) and wasted resources (e.g., if machines or VMs are statically assigned, but resources go unused).

I will describe some of the trends I am seeing, and research directions I am exploring in the design of distributed runtime systems. This is an informal work-in-progress talk - feedback very welcome.