IFIP TC1 - Switzerland

Annual Report 2010

- **Organization at Geneva of a IFIP TC1 Special Seminars:**

1- Green Internet Routers
Prof. Sartaj Sahni, University of Florida, USA

Abstract:

Internet traffic moves from source to destination via intermediate Internet nodes. At each intermediate node, a outer is used to determine the next node on the source to destination path. The design of an Internet router poses several challenges including energy consumption and processing speed. This talk focuses on the energy consumption trend by worldwide Internet routers and on research to reduce the energy consumed while simultaneously improving processing performance. Since Ternary Content Addressable Memories are widely used in commercial routers and since these memories consume significant energy, the talk focuses on recently developed energy efficient router lookup table designs using these memories.

Biography:

Sartaj Sahni is a Distinguished Professor and Chair of Computer and Information Sciences and Engineering at the University of Florida. He is also a member of the European Academy of Sciences, a Fellow of IEEE, ACM, AAAS, and Minnesota Supercomputer Institute, and a Distinguished Alumnus of the Indian Institute of Technology, Kanpur. In 1997, he was awarded the IEEE Computer Society Taylor L. Booth Education Award ``for contributions to Computer Science and Engineering education in the areas of data structures, algorithms, and parallel algorithms'', and in 2003, he was awarded the IEEE Computer Society W. Wallace McDowell Award ``for contributions to the theory of NP-hard and NP-complete problems''. Dr. Sahni was awarded the 2003 ACM Karl Karlstrom Outstanding Educator Award for ``outstanding contributions to computing education through inspired teaching,

development of courses and curricula for distance education, contributions to professional societies, and authoring significant textbooks in several areas including discrete mathematics, data structures, algorithms, and parallel and distributed computing." Dr. Sahni has published over three hundred research papers and written 15 texts. His research publications are on the design and analysis of efficient algorithms, parallel computing, interconnection networks, design automation, and medical algorithms.

Date: Friday June 18th, 2010, 9.00 a.m.

2- Model-Based Design for Modern Computer Games

With **Prof. Hans Vangheluwe**, University of Antwerp, Belgium

In the Modelling, Simulation and Design Lab (MSDL), distributed over Antwerp University in Belgium and McGill University in Montreal, we study the theory of Multi-Maradigm modelling and build tools to support the design and implementation of complex (software-intensive) systems. In particular, we have developed a Computer Aided Multi-Paradigm Modelling (CAMPaM) tool named AToM3 (in collaboration with Prof. Juan de Lara from the Autonoma de Madrid) based on meta-modelling and graph transformation. Modelling research is complemented by work on resource-aware, possibly distributed, simulation.

Abstract:

Recently, the complexity of modern, real-time computer games has increased drastically. The need for sophisticated game AI, in particular for Non-Player Characters grows with the demand for realistic games. Writing consistent, re-useable and efficient AI code has become hard. The presentation demonstrates how modelling game AI at an appropriate abstraction level using an appropriate modelling language has many advantages. A variant of Rhapsody Statecharts is proposed as an appropriate formalism. The Tank Wars game by Electronic Arts (EA) is used to demonstrate our concrete approach. We show how the use of the Statecharts formalism leads quite naturally to layered modelling of game AI and allows modellers to abstract away from choices between, for example, time-slicing and discrete-event time management. Finally, our custom tools are used to synthesize efficient C++ code to insert into the Tank Wars main game loop.

Date: Tuesday June 8th, 2010, 10.00 a.m.

3- Cloud computing: hot or not?

With **Ian Prince**, software architect and co-owner of Inextenso

Abstract:

What is cloud computing? Different meanings for different people? Who uses it, and what for? Who are the main industry players? What are the risks and the opportunities? I will try and answer these questions and quite a few more during my talk.

Short bio:

Ian Prince is a software architect and co-owner of inextenso, founded in 1996. Ian has been building web applications for clients such as Nespresso, EPFL, Swisscom and Publicitas since 1993 and has previously worked at the Centre Universitaire d'Informatique (CUI), the Centre for Research on Direct Democracy (C2D) and the World Economic Forum.

Date: Monday April 19th, 2010, 6.15 p.m.

- **Divulgation at the TC1 activities at the following conferences:**

   IEEE DCOSS:

The 6th IEEE International Conference on Distributed Computing in Sensor Systems (DCOSS '10) took place at the UC Santa Barbara Conference Center in Santa Barbara, California, USA during Monday, June 21 - Wednesday, June 23, 2010.
DCOSS is intended to cover several aspects of distributed computing in sensor systems such as high level abstractions and models, systematic design methodologies, signal and information processing, algorithms, analysis and applications.
The conference is co-located with several closely related workshops, and provides a forum for researchers and practitioners to present their contributions related to the above high-level aspects of distributed sensor systems. In addition to contributed papers, the meeting also includes keynote addresses by leading researchers, a panel discussion, and a poster session.

SEA 2010:

The 8th Symposium on Experimental Algorithms took place on May 2010 in
Ischia Island, Italy . The SEA meetings are intended to be an international forum for
researchers in the area of experimental evaluation and engineering of algorithms, as well as
in various aspects of computational optimization and its applications.

ICALP 2010:

The 37th International Colloquium on Automata, Languages and Programming, the main
conference and annual meeting of the European Association for Theoretical Computer
Science (EATCS), took place from the 5th to the 10th of July 2010 in Bordeaux, France.
The main conference was preceded by a series of Workshops on several subjects related
to theoretical computer science and topics of the main interest of TC1

Random-Approx 10

The Workshop on Approximation Algorithms for Combinatorial Optimization Problems -
APPROX 2010 and the Workshop on Randomization and Computation - RANDOM 2010
was held in Barcelona , during September 2010.
APPROX'2010 focuses on algorithmic and complexity theoretic issues relevant to the
development of efficient approximate solutions to computationally difficult problems,
while RANDOM'2010 focuses on applications of randomness to computational and
combinatorial problems. Both focus of Random and Approx are within the main topics
of the IFIP TC1.