Research positions at the Real-Time Systems Laboratory, Scuola Superiore Sant'Anna

The Real-Time Systems Laboratory of Scuola Superiore Sant'Anna (http://retis.sssup.it), one of the leading research groups in Europe in the field of real-time and embedded systems, is offering **post-degree** and **post-doc research positions** in the area of *Operating System support for time-sensitive applications on multi-core and many-core platforms*. We look for passionate researchers that wish to build a strong academic and industrial curriculum.

The position will be financially supported by the S(o)OS FP7 European Project (Service-Oriented Operating Systems, Grant Agreement n. 248465).

What you will be working on

The candidate will design and realize innovative mechanisms for the allocation of resources and scheduling of massively parallel applications on many-core and heterogeneous platforms. The research activities will range from designing proper ad-hoc interfaces between scalable real-time applications and the Operating System, to realizing mechanisms internal to the OS kernel with the necessary level of efficiency, scalability and the support for the timing constraints of the applications, whenever present. The candidate will have the opportunity to experiment with a many-core AMD 48-core platform, with a traditional architecture, and/or with the prototype Intel Single-Chip Cloud Computer platform (Intel SCC), with a Network-on-a-Chip architecture without cache coherency. In alternative or addition, the candidate may work on a simulator platform for tile-based many-core systems.

Why you should apply

These positions constitute an excellent opportunity for working at the Real-Time Systems Laboratory of the Scuola Superiore Sant'Anna, in an international highly competitive and innovative research environment. The candidate will have the opportunity to work in a European research project, submit (and hopefully publish!) research papers in the areas of Real-Time Systems, Operating Systems and Parallel Computing and build a strong research curriculum.

Required expertise

Potential candidates must possess a MSc or PhD degree (for the post-doc) in *Computer Engineering* or *Computer Science*. Essential pre-requisites are:
– good knowledge of both written and spoken English;
– knowledge of Operating Systems, familiarity with Linux;
– good expertise in C/C++ programming;
– knowledge of basic real-time scheduling techniques;
– knowledge of hardware architectures, caches, processor privilege levels, memory protection.

Good knowledge about (and expertise with) the following topics are optional (they constitute a plus):
– software design and programming;
– kernel-level programming (Linux or other OS);
– multi-core programming and parallel computing;
– machine and OS virtualization mechanisms;
– formalisms for modeling computing systems;
– stochastic modeling of networks and systems;
– network protocols.

Also, research records, such as publications and participation to national or international research projects, constitute a plus for the evaluation.

Short description of the S(o)OS project

More and more cores are being integrated into one single chip and more and more machines of this type are getting connected with increasing bandwidth. Processors are becoming heterogeneous and reconfigurable, allowing for dynamic adaptation to specialized needs. Existing Operating Systems and programming models struggle to cope with this kind of platforms.

The Service-oriented Operating Systems (S(o)OS) Project addresses the needs of future terascale distributed systems by building on service-oriented architectures (SOA) and on the strengths of Grids. It investigates on new paradigms to make an efficient use of resources, across all layers: programming models, compilers, middleware, Operating Systems.

More information is available on the project website: http://www.soos-project.eu.

Where and When

The work will be carried out at the Real-Time Systems Laboratory of Scuola Superiore Sant'Anna, in Pisa (Italy), under the supervision of Prof. Giorgio Buttazzo and Dr. Tommaso Cucinotta, and it will span a 1-year time-horizon starting from March 2012. The position may be renewed up to a maximum of 4 years.

How to apply

In order to apply for this position, the candidate should apply *within February 28th* to the procedure described at the URL: http://retis.sssup.it/?q=node/119. In case of difficulties, please contact the Administration Office (tel. +39-050-883.254, e-mail zinnai@sssup.it). Note that the application must be physically sent and reach our administration within the above date, independently of the forwarding date.

The candidate is highly encouraged to send a preliminary e-mail of interest to Dr. Tommaso Cucinotta (`t.cucinotta at sssup.it`), including a full Curriculum Vitae and a 2-page research statement describing his/her research interests, *before February, 15th 2011*.

About the Scuola Superiore Sant'Anna

The Scuola Superiore Sant'Anna of Pisa (Italy) is a public university institute working in the field of *applied sciences*. The Social Sciences field includes Economic Sciences, Legal Sciences and Political Sciences. The Experimental Sciences field includes Agricultural Sciences, Medical Sciences, and *Industrial and Information Engineering*.

More information is available on the institution website: http://www.sssup.it.