PFARM Guest Talk: “Proactivity = Observation + Analysis + Knowledge extraction + Action planning?”

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Abstract:

The core of proactive system management is the exploitation of the built-in intelligence of computer infrastructures in order to implement self-* properties for the assurance of a guaranteed quality of service even in the case of faults by reacting to them prior they affect services.

The creation of a proper system control policy and implementation is always highly challenging. Modern private and public infrastructures are extremely large; accordingly, fault recovery relies to an increasing extent on rough granular reconfiguration. This way, traditional, discrete representation based fine granular fault handling mechanisms need to be complemented with efficient system level policies using continuous quantitative system models.

A continuous observation-learning-policy improvement process is needed to build up and maintain efficient control policies. The most efficient way is the granular refinement of an initial control policy by observing the system behavior under an initial control policy. Subsequently, the improvement of the quality of the control is based on the processing of the basic information collected in the form of logs. Note, that this roundtrip is the only way to cope with the typically rapidly evolving and changing application environments.

The presentation will provide an overview on the relation of data acquisition, log processing, modern signal processing and artificial intelligence for knowledge extraction needed to a proper, empirical model based system monitoring and control policy. The basic approaches and tools will be illustrated by a complete example workflow motivated by the recent industry sponsored research projects at BME on large scale infrastructure control.

Biography:

András Pataricza is a graduate from and full professor at the Budapest University of Technology and Economics (BME). He holds a C.Sc. (1989) and a D.Sc. (2008) from the Hungarian Academy of Sciences. He founded BUTE’s Fault-Tolerant Systems Research Group in 1994. He served twice as visiting professor at the University of Erlangen in Germany; he has also been a visiting professor of the Center for Advanced Security Research Darmstadt (CASED).

Prof. Pataricza has received multiple recognition awards from scientific and industrial organizations like the Hungarian Academy of Sciences, John von Neumann Computer Society, IBM, HP and others. Since 2006 he is a visiting professor at the IBM Budapest CAS.

He has acted as technical leader and/or advisor to many international scientific projects and EU scientific research programs. His research and teaching activities cover dependable systems, formal methods and model based system design. He served several times in the program committees of international scientific events in the field like IEEE FTCS, DSN and PFARM. He published in these fields two books, 6 book chapters and more than 120 conference and journal papers.
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