

UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II

**DOTTORATO DI RICERCA / PHD PROGRAM IN
INFORMATION TECHNOLOGY AND ELECTRICAL ENGINEERING**

Seminar announcement

Wednesday 26 June 2024, Time: 10:00 - 11:00

Room T.1, Floor 0, Building 1, Via Claudio, 21 – NAPOLI

[https://teams.microsoft.com/l/meetup-](https://teams.microsoft.com/l/meetup-join/19%3ameeting_MmY0MmE4YmMtNmFINi00OGZkLTg4YWUtMmQyNWZM2M5MWVh%40thread.v2/0?context=%7b%22Tid%22%3a%222fcfe26a-bb62-46b0-b1e3-28f9da0c45fd%22%2c%22Oid%22%3a%227630d56e-adf1-4b76-87a9-d5997c46f95f%22%7d)

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Prof. Dipl.-Ing. Dr. Gerhard Fohler

Chair of Real-Time Systems

Technical University of Kaiserslautern, Germany

Real-time Resource Management for Adaptive Embedded Systems and Applications

Abstract: Real-time systems are computer systems, which are subject not only to functional requirements, but also temporal ones. They ensure that results are produced with correct values, but also at the right time. Besides traditional applications with real-time requirements, such as control of processes in production or in airplanes, real-time systems are used more and more in devices of daily life, such as consumer electronics or cell phones.

Many of the early methods focus on the most demanding applications and situations, which can result in high cost, e.g., due to over provisioning. Information about the characteristics of such applications and systems is not fully available beforehand or costly to obtain. Changes of both become the regular case. The scope of early methods has thus been reduced to niches; new paradigms are needed.

We propose adaptive real-time resource management as a basis to enable more general notions. In this talk, we will first present some properties of real-time systems and why fast on average does not suffice. Then we will analyze two basic activation paradigms, time triggered and event triggered, which are seen as mutually exclusive, but with important properties each, determinism and flexibility. We will present a method which enables the coexistence of both in the same system, as opposed to an either-or approach. It is suitable for mixed criticality applications.

Taking video processing as example of applications with highly varying demands, we will show how real-time resource management can improve resource usage and perceived quality in adaptation, with mobile terminals as example of adaptive embedded system.

Lecturer short bio: *Gerhard Fohler has been holding the Chair for Real-time Systems at TU Kaiserslautern since 2006. He received his Dipl. Ing. and Ph.D. degrees with honors from the TU Vienna, Prof. Hermann Kopetz, then was with the University of Massachusetts at Amherst, USA as postdoctoral researcher. Before joining TU Kaiserslautern, he was with MDH Sweden where he was promoted to full professor. His research is based on issues in the field of real-time, embedded systems, with emphasis on safety critical and flexible real-time systems and networks. He has been involved in a number of EU projects, coordinator and partner, and was core partner of the EU IST Networks-of-Excellence ARTIST. He was Chairman of the Technical Committee on Real-time Systems of Euromicro, which is responsible for ECRTS, the prime European conference on real-time systems, was member of the executive board of the real-time and embedded committees of the IEEE. He was program chair of the leading real-time conferences, and is associate editor of Springer's Real-time System Journal. He has been serving as expert reviewer for the EU IST embedded systems unit and other funding agencies. He has received the IEEE Technical Committee on Real-time Systems award for outstanding service to the real-time systems community and the ECRTS Outstanding Achievements Award for his efforts to turn ECRTS into one of the leading conferences in real-time systems.*

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