Lakeside Labs

Lakeside Labs GmbH
9020 Klagenfurt | Lakeside Park B04

Phone (+43–463) 2870 44
Fax(+43–463) 287044–10

office@Lakeside-Labs.com
www.Lakeside-Labs.com

Colloquium:
Time-Frequency Logic For Signal Processing

Univ.Prof. Dipl.-Ing. Dr.rer.nat. Radu Grosu

Vienna University of Technology
Department of
Computer Engineering

Real Time Systems Group
DE0340 Treitlstraße 3
1040 Wien | Österreich

radu.grosu@tuwien.ac.at
http://ti.tuwien.ac.at/rts/people/grosu/

Abstract

In this talk I will first introduce Time-Frequency Logic (TFL), a new specication formalism for real-valued signals that combines temporal logic properties in the time domain with frequency-domain properties. I will then present a property checking framework for this formalism and demonstrate its expressive power to the recognition of musical pieces. Like hybrid automata and their analysis techniques, the TFL formalism is a contribution to a unied systems theory for hybrid systems

This is joint work with Alexandre Donze, Oded Maler, Dejan Nickovic, Ezio Bartocci and Scott Smolka.

Bio

Radu Grosu is a Professor and Head of the Dependable-Systems Group at the Faculty of Informatics of the Vienna University of Technology, and a Research Professor at the Computer Science Department of the State University of New York at Stony Brook. His research interests include modeling, analysis and control of cyber-physical and biological systems and his application focus includes green operating systems, mobile ad-hoc networks, automotive systems, the Mars rover, cardiac-cell networks and genetic regulatory networks. Grosu is the recipient of the National Science Foundation Career Award, the State University of New York Research Foundation Promising Inventor Award, the ACM Service Award, and a member of the International Federation of Information Processing WG 2.2. Before receiving his appointment at the Vienna University of Technology, Grosu was an Associate Professor in the Computer Science Department of the State University of New York at Stony Brook, where he co-directed the Concurrent-Systems laboratory and co-founded the Systems-Biology laboratory. Grosu earned his Dr.rer.nat. in Computer Science from the Technical University of München, and was a Research Associate in the Computer Science Department of the University of Pennsylvania.

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SELF-ORGANIZING
NETWORKED
SYSTEMS