ALPEN-ADRIA UNIVERSITÄT KLAGENFURT

Invitation to a Guest Lecture

Dr.-Ing. Christian Ebenbauer

RWTH Aachen University

"Control Theory for Optimization Algorithm Synthesis"

N.2.01 | Wednesday, 8 February 2023 | 10:00 a.m.

Abstract

Various research activities in the area of analysis and synthesis of optimization algorithms using concepts from systems and control theory have been initialized in recent years. These activities are motivated by the fact that many optimization algorithms are dynamical systems and thus tools from control theory can be used to analyze and design algorithms. A further motivation is the increasing integration of online optimization in complex automated and intelligent systems due to the high availability of online computing power and big data sets. This integration makes it necessary to take the dynamics of optimization algorithms into account in a fundamental fashion in order to achieve reliable and efficient operation of such systems. In the first part of the talk, examples of designing algorithms based on systems and control theory are presented. In particular, we illustrate ideas how concepts from optimal, nonlinear, robust, and stochastic control can be utilized to synthesis optimization algorithms.

Viktoriia Grushkovska and the Department of Mathematics look forward to seeing you at the talk!