

Lecture Series of the Research Institute for Supply Chain Management

Friday, October 18, 2024, 12:30 pm



Building TC, Room TC 5.01
Welthandelsplatz 1,
1020 Vienna

DIMITRIS SIMOS:

COMBINATORIAL METHODS FOR TESTING AND ANALYSIS OF COMPLEX SYSTEMS

Combinatorial methods have attracted attention as a means of providing high assurance at reduced cost, but when are these methods practical and cost effective?

This talk will focus on the background, process and tools available for combinatorial testing, with illustrations from industry experience of the method. The focus is on practical applications, including R&D examples of testing complex systems to meet standards for life-critical software, such as in avionics or the automotive industry. The discrete mathematical modelling and data generation methods in combinatorial testing allow for a degree of universality, and as part of a future outlook, we will show how such methods can be adapted for use cases typically encountered in research problems in operations research and disaster management.

Dimitris E. Simos is Key Researcher for the Applied Discrete Mathematics for Information Security research area with SBA Research located in Vienna and leads its Mathematics for Testing, Reliability and Information Security (MATRIS) research group. He is also the Head of Strategic Research at SBA Research responsible for shaping and implementing the strategic R&D agenda of the research center. He is also an Associate Professor (non-tenured track, habilitation in Applied Computer Science) with Graz University of Technology and holds a Guest Researcher appointment with the US National Institute of Standards and Technology (NIST), Applied Computational Mathematics Division (ACMD). During his career Dimitris has (co)-authored over 150 papers in Discrete Mathematics and their applications to Computational and Computer Science and has been awarded the rank of Fellow of the Institute of Combinatorics and its Applications (FTICA) and the Applications of Computer Algebra Early Researcher Award (ACA-ERA 2024). His research interests include Combinatorial Designs and their applications to Software Testing, Symbolic Computation, Optimization, Disaster Management and all aspects of Information Security.

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