

Dissertation press release

04.09.2020

Probabilistic decision models support the optimal design and operation of safety-critical systems

Title of the dissertation	Risk-informed optimization of mitigation strategies in safety-critical systems
Contents of the dissertation	<p>The performance of industrial systems can be compromised due to multiple risks, caused by accidents and threats. Such risks may result in system failure, which leads to safety, financial and environmental consequences. For this reason, industrial organizations need to invest in the design and operations of their production systems in order to improve the reliability, availability, maintainability and safety of their systems.</p> <p>This dissertation proposes an innovative framework to assess and select risk mitigation strategies in the design and operations of systems, based on the minimization of risks of the overall system. In this framework, the analysis of systemic risks integrates component-based analyses to manage the industrial system optimally while satisfying budget and technical constraints. The applicability of this framework is illustrated by re-examining case studies which have been previously analyzed in literature as well as by presenting new real-life case studies based on statistical data and expert judgement.</p> <p>The methodological and computational results of the dissertation can be readily adapted to develop further applications in other areas of industrial activity.</p>
Field of the dissertation	Systems and Operations Research
Doctoral candidate	Alessandro Mancuso, Master of Engineering Born in Segrate (Italy) 1990
Time of the defence	18.09.2020 at noon
Place of the defence	Aalto University School of Science, lecture hall H304, Otakaari 1, Espoo Zoom link: https://aalto.zoom.us/j/69611217934
Opponent	Professor Lesley Walls, University of Strathclyde, UK
Custos	Professor Ahti Salo, Aalto University School of Science, Department of Mathematics and Systems Analysis
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Doctoral candidate's contact information	Alessandro Mancuso, Department of Mathematics and Systems Analysis, alessandro.mancuso@aalto.fi
