

Department of Electrical and Computer Engineering

Title: «*The importance of Modeling Critical Infrastructures Interdependencies*»

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Room XOD 02 – B108, New Campus - University of Cyprus

Abstract:

Critical infrastructures, such as power systems, telecommunication systems, and water systems, provide the necessary services that make peoples' everyday tasks and activities easier and less stressful. Thus, their reliable and continuous operation is essential. However, critical infrastructures are complex large scale systems with many parts exposed to the risk of accidents, failures, and malicious attacks that can degrade their reliability. In addition, interdependencies between different critical infrastructures, which are often implicit, hidden and not well understood even by infrastructure owners and operators, can increase the potential for cascading failures from one infrastructure to another.

In this talk we will discuss the importance of modeling critical infrastructure interdependencies. Including interdependencies to the models offers more accurate representations and provides considerable insights into the infrastructures complex behavior and operational characteristics, particularly when stressed or under attack. Despite the numerous innovative modeling approaches that have been developed to directly address interdependencies, the need to further develop existing approaches and introduce new ones is widely recognized. This is because existing approaches usually lack generalization, maturity, and they are rather complementary with each other and quite difficult to integrate together into a uniform framework. Furthermore, the lack of relevant data or the difficulty of accessing available data from critical infrastructures owners, due to confidentiality and privacy issues, coupled with the fact that critical infrastructures change over time, makes both development and validation of interdependency modeling approaches challenging tasks.

Biography:

Constantinos has received a B.Sc. and M.Sc. degree in Electrical Engineering from the University of Cyprus in 2009 and 2012 respectively. He is currently Ph.D. candidate at University of Cyprus ECE Department and a Researcher at KIOS Research Center for Intelligent Systems and Networks. His research focuses on modeling and simulating critical infrastructures interdependencies using hybrid systems, optimization, and fault detection. More: <https://sites.google.com/site/constantinosheracleous/>