CAD Tool for Automatic Network Synthesis

The proliferation of communication technologies for embedded systems opened the way for new applications, e.g., Smart Cities and Industry 4.0. In such applications hundreds or thousands of smart devices interact together through different types of channels and protocols. This increasing communication complexity forces computer-aided design methodologies to scale up from embedded systems in isolation to the global inter-connected system. Network Synthesis is the methodology to optimally allocate functionality onto network nodes and define the communication infrastructure among them. This booth will demonstrate the functionality of a graphic tool for automatic network synthesis developed by the Computer Science Department of University of Verona. It allows to graphically specify the communication requirements of a smart space (e.g., its map can be considered) in terms of sensing and computation tasks together with a library of node types and communication protocols to be used.

Keywords:
Networked embedded systems, network topology, network protocols, design-space exploration, design tools and techniques, optimization, mixed-integer linear programming, MILP, model-driven design.