



Research School for Operations
Management and Logistics

The Feature-Based Network Fitting Framework: an approach for fitting structural features in networks

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In my research project, I aim to introduce a framework for network analysis. Firstly, I will focus on developing algorithms for imposing certain features on networks using Operations Research theory. For example, we can study problems such as how to optimize the connectivity within in an organizational structure. Or, how we can minimize systemic risk in financial interbank networks while preserving economic needs for financial institutions. Another type of problems in scope is how to increase the robustness of an electrical grid. By imposing features which contribute to the desired performance measure of the network, we can advise managers and policymakers on what connections in the network to strengthen or weaken to reach their policy goals. Secondly, I will focus on using the framework to construct networks based on partial data, where the network inherits the partial data as is. This can contribute to network analysis in disciplines where connections between entities can be confidential and only data on the macro-level of the network is known. Generating alternative instances satisfying partial data allows us to estimate levels of network metrics (e.g. systemic risk), which subsequently can advise policymakers (e.g. raising capital requirements) on how to reach their targets.