Centrality and Communities in Complex Socio-Economic Networks

Ernesto Estrada

Complex Systems Research Group X-Ray Unit RIAIDT-Structural Studies Area Edificio CACTUS. University of Santiago de Compostela 15782 Santiago de Compostela

Abstract

I will explain how to characterize the local centrality of nodes in complex networks by using the exponential adjacency matrix. I will give some examples of applications in socio-economic networks. Then I will develop a function for characterizing the communicability between nodes in a network. Such approach is based on the exponential adjacency matrix of the graph and can be seen as the thermal Green’s function of the network. Using such approach I will explain how to define and detect communities in complex networks.