



Exame de Qualificação

q-Jensen Divergence Applied to Complex Networks Analysis

TIAGO ALVES SCHIEBER DE JESUS

We deal here with the issue of complex network evolution and robustness. The analysis of topological evolution of complex networks plays a crucial role in predicting their future. While an impressive amount of work has been done on the issue, very little attention has been so far devoted to the investigation of how information theory quantifiers can be applied to characterize networks evolution. With the objective of dynamically capture the topological changes of a network's evolution, we propose a model able to quantify and reproduce several characteristics of a given network, by using the square root of the Jensen-Shannon divergence in combination with the mean degree and the clustering coefficient. The results show that the methodology was able to mimic the test-networks. By using this copycat model, the user is able to analyze the networks behavior over time, and also to conjecture about the main drivers of its evolution, also providing a framework to predict its evolution. In the field of network robustness, we propose the use of q-Jensen divergences to redefine the concept of network robustness.

Comissão Examinadora

Prof. Martin Gomez Ravetti (UFMG)

Prof. Antonio Alfredo Ferreira Loureiro (UFMG)

Prof. Leonardo Pereira Santiago (UFMG)

Prof. Alejandro César Frery Orgambide (UFAL)

Prof. Osvaldo Anibal Rosso (UFAL)

03 de julho de 2014

09:30h

sala T005, Escola de Engenharia