

A model to identify urban traffic congestion hotspots in complex networks

Alex Arenas (Universitat Rovira i Virgili) Albert Solé-Ribalta, Sergio Gómez

The rapid growth of population in urban areas is jeopardizing the mobility and air quality worldwide. One of the most notable problems arising is that of traffic congestion. With the advent of technologies able to sense real-time data about cities, and its public distribution for analysis, we are in place to forecast scenarios valuable for improvement and control. Here, we propose an idealized model, based on the critical phenomena arising in complex networks, that allows to analytically predict congestion hotspots in urban environments. Results on real cities' road networks, considering, in some experiments, real traffic data, show that the proposed model is capable of identifying susceptible junctions that might become hotspots if mobility demand increases.