SOE 22: Social Systems, Opinion and Group Dynamics III

Time: Friday 9:30–10:15 Location: H44

Invited Talk SOE 22.1 Fri 9:30 H44

Hypergraphs and social systems — •Guido Caldarelli — Università "Sapienza", Rome, Italy

Recent years have witnessed the emergence of a new class of social networks, which require us to move beyond previously employed representations of complex graph structures. A notable example is that of the folksonomy, an online process where users collaboratively employ tags to resources to impart structure to an otherwise undifferentiated database. Here we propose a mathematical model that represents these structures as tripartite hypergraphs and define basic topological quantities of interest. Furthermore we can extend our model by defining additional quantities such as edge distributions, vertex similarity and correlations as well as clustering. We then empirically measure these quantities on two real life folksonomies, the popular online photo sharing site Flickr and the bookmarking site CiteULike. We find that these systems share similar qualitative features with the majority of complex networks that have been previously studied. We propose that the quantities and methodology described here can be used as a standard tool in measuring the structure of tagged networks.