

中央研究院統計科學研究所

學術演講

講題：Influencers and communities in social networks

演講人：Prof. Wolfgang Karl Härdle

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時間：2019年12月2日（星期一）上午11:00-12:00

地點：中央研究院統計科學研究所6005會議室(環境變遷研究大樓A棟)

Abstract

An integration of social media characteristics into an econometric framework requires modeling a high dimensional dynamic network with dimensions of parameter Θ typically much larger than the number of observations. To cope with this problem we impose two structural assumptions onto the singular value decomposition of $\Theta = UDV^T$. Firstly, the matrix with probabilities of connections between the nodes of a network has a rank much lower than the number of nodes. Therefore, there is limited amount of non-zero elements on the diagonal of D and the whole operator admits a lower dimensional factorisation. Secondly, in observed social networks only a small portion of users are highly-affecting, leading to a sparsity regularization imposed on singular vectors V . Using a novel dataset of 1069K messages from 30K users posted on the microblogging platform StockTwits during a 4-year period (01.2014- 12.2018) and quantifying their opinions via natural language processing, we model their dynamic opinions network and further separate the network into communities. With a sparsity regularization, we are able to identify important nodes in the network.

Keywords: social media, network, community, opinion mining, natural language processing

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