

# Privacy-sensitive Vital Node Identification in Complex Networks

Diaoulé Diallo

Deutsches Zentrum für Luft- und Raumfahrt e.V.

Institut für Softwaretechnologie | Intelligente und verteilte Systeme

The identification of vital nodes in complex networks is of immense significance across a wide range of research domains and applications, including social network analysis, epidemiology, and physics. These fields frequently employ centrality measures to study complex networks. Despite the importance of privacy in the analysis of networks containing sensitive data, there has been limited research on its role in identifying vital nodes. This is particularly relevant in instances where networks contain sensitive information that is not widely shared, such as in Bluetooth-based contact networks. Our study aims to evaluate the performance of centrality measures in determining node vitality under varying levels of privacy. Specifically, state-of-the-art algorithms for ranking the vitality of nodes are evaluated under the condition that only limited neighbor information is available. Extensive experiments are conducted using various real-world networks.