



IVAN

Abstract

Interactive and Visual Analysis of Networks

Our main goal is to create a visual analysis system for the exploration of dynamic or time-dependent networks (from small to large scale). Our contributions will be in three principle areas: (A) novel algorithms for network clustering that are based on graph harmonic analysis and level-of-detail methods; (B) the development of novel similarity measures for networks and network clusters for the purpose of comparing multiple network clusterings and the grouping (clustering) of different network clusterings; and (C) a system for user-driven analysis of network clusterings supported by novel visual encodings and interaction techniques suitable for exploring dynamic networks and their clusterings in the presence of uncertainties due to noise and uncontrolled variations of network properties. Our aim is to make these novel algorithms accessible to a broad range of users and researchers to enable reliable and informed decisions based on the network analysis. A focus in all three areas will be on the incorporation of uncertainty into the analysis and visual encoding to enhance the trust in the decision making. While we are aiming to create tools for a variety of use cases, we specifically focus on two application areas -- social networks such as Twitter as well as brain functional networks. These are two applications where the consortium has a lot of expertise, yet which are very different in terms of users and tasks. Hence, we hope to be able to generalize from these two specific applications. Our team consists of three distinct research labs with expertise in harmonic analysis (Dr. Van De Ville, EPFL, Switzerland), expertise in network visualization (Dr. Fekete, Inria France) and expertise in supporting of visual model building and analysis under uncertainty (Dr. Möller, Uni Wien, Austria). This is a unique combination of skills that is indispensable to successfully tackle the challenges of this endeavour made possible only under the unique requirements of this funding call.

(2016)

Visual Analytics for Decision-Making under Uncertainty (VADMU)

Partnership & Contact

IVAN starts in October 2017, lasts 36 months and involves the partnerships below. The financial support of CHIST-ERA is about 568159 €.

Attachment

Size

 [CHIST-ERA Call 2016 - VADMU Topic - IVAN 2018.pdf](#)_[1]

1.85 MB

- [Administration](#)

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Links:

[1] <http://www.chistera.eu/sites/chistera.eu/files/CHIST-ERA%20Call%202016%20-%20VADMU%20Topic%20-%20IVAN%202018.pdf>