

SOCIAL-AWARE COMMUNICATION NETWORKS AND SYSTEMS AND INNOVATIVE SOCIAL NETWORK APPLICATIONS AND SERVICES



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Welcome to the Feature Topic (FT) of Social-Aware Communication Networks and Systems and Innovative Social Network Application and Services of the *IEEE Communications Magazine*. Social dimension in conjunction with physical proximity offer a wealth of information that could be exploited across multiple disciplines and for a wide range of challenges. Without being exhaustive, developing social-aware networking algorithms for improving various networking operations, designing incentive mechanisms for promoting cooperation and establishing trust in order to address security concerns in open, uncertain and competitive environments, identifying graph topology structure as well as its evolution, along with influence paths for maximizing the impact of information dissemination and exploring decision making process in a social psychology context are prominent examples of social-aware networks and advanced applications. Yet, many challenges need to be solved. This issue includes three articles that have been reviewed and approved for publication by experts in the respective fields.

In the realm of complex network analysis, the quest to unveil communities within attributed networks stands as a pivotal research endeavor. In this respect, the article “Evolutionary Computing Empowered Community Detection in Attributed Networks” by Kun Guo, Zhanhong Chen, Zhiyong Yu, Kai Chen, and Wenzhong Guo, introduces a community detection algorithm enriched by multi-objective evolutionary computing, named ECEVO-MOEA. By leveraging an edge closeness encoding scheme and multiple attribute-aware objective functions, ECEVO-MOEA orchestrates the evolution of a biological population. Simultaneously, the update of embedding vectors facilitates the computation of a similarity matrix and communities, thereby enhancing solution quality and averting premature convergence. Experimental validations on real networks underscore the superior accuracy of ECEVO-MOEA compared to baseline algorithms.

Exploring the evolving landscape of wireless networking in vehicular social networks, the article titled “A Reputation-Based Trustworthiness Concept for Wireless Networking in Vehicular Social Networks” by Anna Maria Vegni, Claudia Leoni, Valeria Loscrì, and Abderrahim Benslimane delves into the intricate realm of reputation-based trustworthiness. This article focuses on elucidating the pivotal role of social features in defining node trustworthiness across diverse environments. Through comprehensive analysis and exploration of various metrics and criteria, the study sheds light on how social behaviors shape node trustworthiness, particularly within the dynamic context of vehicular networks. The proposed trustworthiness criterion, based on both node reputation degree and successful transmission probability, presents an encouraging perspective on bolstering network security and reliability.

In order to unravel the intricate dynamics of ideological biases among social media users it is necessary to delve into the evolu-

tion of opinions, polarization trends, and the emergence of echo chambers in online platforms. The article “Dynamics of Ideological Biases of Social Media Users” by Boleslaw K. Szymanski, James Flaminio, and M. Shahid Modi highlights the significance of understanding how user behaviors on platforms like Twitter and Parler contribute to the reinforcement of echo chambers and the polarization of online discourse. Through this meticulous analysis, the authors uncover the underlying mechanisms driving individuals towards opinion groups that resonate with their biases, ultimately contributing to the reinforcement of echo chambers and the polarization of online discourse. The study underscores the pivotal role of homophily in shaping user decisions and the establishment of enduring opinion groups within the digital realm. By elucidating the persistence of biases and the interplay between confirmation bias and homophily, the authors provide valuable insights into the challenges and opportunities presented by the digital landscape in shaping public opinion and fostering meaningful interactions in virtual spaces.

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