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**Key individual identification using dimensional relevance in the stratum of networks**
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**Abstract**
Different aspects of social networks have increasingly been under investigation from last decade. The social network studies range in various viewpoints from the structural and node measures to the information diffusion processes. Key node identification has been one of the limelight topics of social network analysis (SNA) specifically in a discipline like politics, criminology, marketing etc. This research uses multiple networks constructed from the different social site and real-life relationships to cover the multi-dimensional aspects of human relations. In the multi-relationship system, the different dimensions may differ in terms of relevance and weight. One of the most intriguing aspects of key node identification in the multi-dimensional system can be the consideration of dimension relevance. This research covers the methodology to optimize the weights of dimensions using a number of centrality measures from each network layer covering multiple different objectives of interest. The study formulates the novel weighted feature set pertaining to layer relevance calculated based on layers relative importance through particle swarm optimization technique. The framework applies ensemble-based approach on the weighted feature set along with node characteristics to predict key nodes in a network. The results are validated against ground truth data and accuracy achieved is promising. 

**Author Keywords**
dimensional relevance; key player identification; majority voting based ensemble; Multi-layer social networks; particle swarm optimization

**Index Keywords**
Lime, Particle swarm optimization (PSO); Centrality measures, dimensional relevance, Individual identification, Information diffusion process, majority voting based ensemble, Multi dimensional, Multidimensional systems, Particle swarm optimization technique; Network layers

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