

Intelligent Social Network Modeling

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is among the world's top 1% most highly cited researchers. He was the recipient of the IEEE Computational Intelligence Society Pioneer award in Fuzzy Systems. Dr. Yager is a fellow of the IEEE, the New York Academy of Sciences and the Fuzzy Systems Association. He was given a lifetime achievement award by the Polish Academy of Sciences. He served at the National Science Foundation as program director in the Information Sciences program. He was a NASA/Stanford visiting fellow and a research associate at the University of California, Berkeley. He has been a lecturer at NATO Advanced Study Institutes. He has been a distinguished honorary professor at the Aalborg University Esbjerg Denmark. He serves on the editorial board of numerous technology journals.

I. ABSTRACT

Web 2.0 has provided for a rapid growth of computer mediated social networks. Many notable Web 2.0 applications such as Facebook, Myspace and LinkedIn are social networks. Social relational networks are becoming an important technology in human behavioral modeling. Our goal here is to enrich the domain of social network modeling by introducing ideas from fuzzy sets and related granular computing technologies. We approach this extension in a number of ways. One is with the introduction of fuzzy graphs representing the networks. This allows a generalization of the types of connection between nodes in a network from simply connected or not to weighted or fuzzy connections. A second and perhaps more interesting extension is the use of Zadeh's fuzzy set based paradigm of computing with words to provide a bridge between a human network analyst's linguistic description of social network concepts and the formal model of the network. Another useful extension we discuss is vector-valued nodes. Here we associate with each node a vector whose components are the attribute values of the node. Using the idea of computing with words we are then able to intelligently query the network with questions that involve both attributes and connections. We see this as a kind of social network database theory. We shall look at some dynamic structures of network particularly the small worlds network.

II. SHORT BIO.

Ronald R. Yager is Director of the Machine Intelligence Institute and Professor of Information Systems at Iona College. He is editor and chief of the International Journal of Intelligent Systems. He has worked in the area of machine intelligence and decision making under uncertainty for over twenty-five years. He has published over 500 papers and fifteen books. He