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Improving Robustness of Scale-Free Networks to Message Distortion

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ABSTRACT

Vast numbers of organizations and individuals communicate every day by sending messages over social networks. These messages, however, are subject to change as they propagate through the network. This paper attempts to calculate the distortion of a message as it propagates in a social network with a scale free topology, and to establish a remedial process in which a node will correct the distortion during the diffusion process, in order to improve the robustness of scale-free networks to message distortion. We test a model that we created using a simulation of different types of scale-free networks, and we compared different sets of corrective nodes, hubs, regular (non-hubs) nodes, and a combination of hubs and regular nodes. The findings show that using hubs that correct the distorted message while it's diffused, decrease a global error measurement of the distortion, and as a result improve the robustness of the network.