SOCIAL-EXPERT:
AN EXPERTISE RATING ALGORITHM

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ABSTRACT

We study the problem of expert identification in organizations and online communities. The process of finding experts in real life often relies on using networking in the form of word-of-mouth referrals. With this intuition we design a novel expertise finding algorithm called Social-expert that uses social networks. We define social networks that have a system of explicit expertise evaluation or feedback among members as: expertise networks. For each individual in an expertise network, social-expert considers two qualities: peer-rating and credibility. Peer-rating reflects someone's expertise on a topic while credibility represents his or her aptitude in accurately evaluating others' expertise on that topic. Social-expert calculates a global peer-rating and credibility score for each person based on peer expertise evaluations received and made by that person. We test the social-expert algorithm for convergence and effectiveness on a series of expertise network graphs which were constructed from simulated and real world data. Our results show that social-expert outputs converge to stable values relatively quickly and that the effectiveness is dependent upon a few factors. We find that social-expert can effectively identify nodes' expertise and credibility, given most evaluations in the network are somewhat reasonable. We provide some arguments for why this is likely to be the case for real life expertise networks in academic, professional or online communities. Another factor in social-expert effectiveness is how connected the graph is. Based on social-expert design, the more evaluations a node receives or makes, the more accurate we expect his or her peer-rating and credibility scores to be. Consistent with this expectation, our results show that social-expert was more effective in expertise networks with a higher average number of evaluations per node.