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Guo, Fangjian; Su, Jiang; Gao, Jian

Finding conspirators in the network via machine learning.

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The article presents the solution paper of a winning team (University of Electronic Science and Technology of China in Chengdu) of the 14th Interdisciplinary Contest in Modeling (ICM) on a problem where they had to estimate the probability of criminal involvement for individuals in a network of employees of a company with an embedded conspiracy network, and determine the leader of the conspirators.

Peter Dürr (Linkenheim)

Classification: R45 M75 U45 K95

Keywords: interdisciplinary competitions; mathematical competitions; USA; student competitions; mathematical model building; mathematical models; networks; research; criminal network detection; social network analysis; mathematical applications; machine learning; centrality; logistic regression; semantic diffusion; bipartite graphs; resource-allocation dynamics; Kendall's tau; gradient descent; revised leader rank; sensitivity analysis