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عنوان مقاله:

Deception in multi-attacker security game with nonfuzzy and fuzzy payoffs

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خلاصه مقاله:

There is significant interest in studying security games for defense op-timization and reducing the effects of attacks on various security systems involving vital infrastructures, financial systems, security, and urban safe-guarding centers. Game theory can be used as a mathematical tool to maximize the efficiency of limited security resources. In a game, players are smart, and it is natural for each player (defender or attacker) to try to deceive the opponent using various strategies in order to increase his payoff. Defenders can use deception as an effective means of enhancing security protection by giving incorrect information, hiding specific security resources, or using fake resources. However, despite the importance of de-ception in security issues, there is no considerable research on this field, and most of the works focus on deception in cyber environments. In this paper, a mixed-integer linear programming problem is proposed to allocate forces efficiently in a security game with multiple attackers using game the-ory analysis. The important subjects of information are their credibility and reliability. Especially when the defender uses deceptive defense forces, there are more ambiguity and uncertainty. Security game with Z-number payoffs is considered to apply both ambiguities in the payoffs and the reli-ability of earning these payoffs. Finally, the .proposed method is illustrated by some numerical examples

کلمات کلیدی:

Security game, Deceptive resource, Mixed-integer program-ming, Fuzzy theory, Z-number

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