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## Game theoretic approach: Improvised security mechanism in Mobile Ad hoc Network

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**Abstract:** Mobile Ad hoc network occupies a important place in the global technology which makes possible of various application in different fields. In which game theory is a prominent tool dealing with the study of several problems in mobile ad hoc network (MANET). The traditional methods using this game theory are considered with two players only that are the attacker and defender. This systemic approach is to be worth for the network with centralized administration. But in case of MANET it is not realistic because there is no centralized administration. In this paper we worked using an advanced concept of mean field game theory; as a result we propose a novel method of game theory with multiple players for the security enhancement in MANET. The mean field game theory is nothing but mathematical tool which efficient for cases dealing with multiple players. In MANET our proposed scheme enables a single node with strategic security by means of defense decision without centralized administration. Moreover the mechanism that dealing with defense security needs to consume a wide range of energy resources. A special thing in our proposed system is not only dealing with security but also for energy resources in MANET. The mechanism behind this approach is each novel has an idea of its own state of information as well as the aggregate effect of other nodes present in the MANET. It is a fully distributed system with effective mechanism in retaining the security level in a MANET.