

A Game of Information in Defense/Attack Strategies: Case of Poisson Attacks

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Abstract : In this paper, we briefly introduce the concept of Poisson attacks in the case of defense/attack strategies where attacks are assumed to be continuous. We suggest a game model in which the attacker will combine both criteria of a sufficient confidence level of a successful attack and a reasonably small size of the estimation error in order to launch an attack. Here, estimation error arises from assessing the system failure upon attack using aggregate data at the system level. The corresponding error is referred to as aggregation error. On the other hand, the defender will attempt to deter attack by making one or both criteria inapplicable. The defender will build his/her strategy by both strengthening the targeted system and increasing the size of error. We will formulate the defender problem based on appropriate optimization models. The attacker will opt for a Bayesian updating in assessing the impact on the improvement made by the defender. Then, the attacker will evaluate the feasibility of the attack before making the decision of whether or not to launch it. We will provide illustrations to better explain the process.

Keywords : attacker, defender, game theory, information

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