MODELING AND ANALYSIS OF ROGUE TARGETS AVOIDING A DETECTION

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A target travels around a region according to a diffusion process with an instantaneous drift which locally maximizes an objective function and with a noise correction. At the beginning obstacles are placed according to a non-homogeneous Poisson spacial process (all the obstacles are placed at once and independently of the diffusion process). Motivated by applications related to tracking and location of rogue objects, we are interested in studying the conditional distribution of the target given that it has evaded the obstacles for long time

Most of the talk focuses on the problem formulation and the analysis, which provides insights leading to a game in which the captor chooses a deployment policy and the target chooses a confinement region. We also hope to describe a Monte Carlo algorithm that evaluates the cost of a given policy. The algorithm can be shown to be asymptotically optimal (in the sense of variance minimization and running time) in a large deviations regime as the time horizon increases and the number of obstacles per unit area is suitably large.