

Pursuit-Evasion Game with Hybrid System of Dynamics

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Abstract

Pursuit-evasion games are the next logical stage in the exploring of powerful, intelligent, adaptive performance. In fact the optimal strategy is known for games in an infinitely sized playing field. The quality of the machine learning methods can thus be compared to the optimal performance possible. Therefore, we consider in this study a pursuit-evasion differential game in Hilbert space l_2 with a hybrid system of dynamics. The game consists of a non-inertial pursuer and an inertial evader where controls of the pursuer and the evader are satisfied to the integral constraints. The duration of the game, φ , is fixed. The position of the evader at time φ satisfies to the phase constraint. We obtain attainability domains of the players and then we make a winning strategy for the pursuer which guarantees capturing the evader. We show that our constructed strategy is admissible as well.

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