Cooperating Teams in Pursuit and Evasion Games

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ABSTRACT:

The mathematics of cooperation is a mostly unexplored terrain. What are the basic principles underlying cooperation? What are the properties of a cooperative system? What are fundamental characteristics of cooperative behavior? Can cooperation be quantified?

This talk proposes a methodology for answering these questions in the case of pursuit and evasion games. Such games are simple enough to allow simple cases to be solved, but complex and varied enough to permit study of some of the deeper questions of cooperation. Preliminary results on one-dimensional games indicate that teams may cooperate at even the most basic level.

A centerpiece of the methodology is a dynamic computational Java platform. The experimental results obtained by this platform will motivate and verify analytical results. We will describe and demonstrate the platform, and indicate a few of the questions that have arisen from its use.

KEYWORDS: pursuit, evasion, cooperation

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