1001-05-100   **Volkan Isler***, 3330 Walnut Street, Levine Hall L402, Philadelphia, PA 19104. *Pursuit-evasion in complex environments: from graphs to polygons.*

A fundamental problem that arises in mobile robotics is pursuit-evasion. In a typical pursuit-evasion game, a pursuer tries to capture an evader who, in turn, actively tries to avoid capture. Practical applications of pursuit-evasion games include surveillance, search-and-rescue, collision avoidance and air traffic control. Designing pursuit strategies that incorporate visibility constraints in a complex environment is a major challenge.

In this talk, I will present pursuit strategies for two such games.

Both games take place in a simply-connected polygon. In the first game (known as the visibility based pursuit-evasion game), the goal is locate an unpredictable evader hiding inside the polygon. The evader can be much faster than the pursuer and it can see the pursuer at all times. I will present a randomized strategy which guarantees that such an evader will be located with high probability. In the second game, the pursuers are as fast as the evader and the goal is now to capture the evader. We will study pursuit strategies for different variants of this game.

In the remainder of the talk, I will present a brief overview of recent results on pursuit-evasion games on graphs. (Received August 16, 2004)