Visibility - based pursuit - evasion in the plane

Pursuit evasion is a general observation in a day to day to day life. The pursuit evasion concept in technology can be correlated with the practical applications like drones, search & rescue (SAR) etc. The related work where the this is used are : differential games, graph based, visibility based single pursuer, visibility based multiple pursuer, surveillance, etc.

Visibility based pursuit based evasion: A robot moving through polygonal environment has to systematically locate one or more evaders in an environment each with arbitrary velocity by catching the evader within the visibility.

The key points that are to be considered are shadows, push, and break. We break a continuous shadows we break it into discrete and solve. Shadows do not change in a particular area.

The proposed GLLLM algorithm: Exhaustive search for the graph. The decomposition used in GLLLM in used for determining conservative regions. This decomposition fails when there are multiple pursuers.

3 – Novel results:

1. Optimal strategy for a single pursuer.
2. A solution strategy exists if there are finite time of capture. Minimum invaders time can be captured.
3. GLLLM may not give the optimal path result all the time.

Multiple pursuer:

Compute a joint motion status for the pursuers that captures an evader in finite time or recognise that no such target exists. Shadows change correspond to changes in shadow vertices.

In abstract samples, we don’t assume any kind of distribution.

Benefit: Our algorithm is not dependant on sampler to generate a solution strategy. Probabilistic completeness algorithm if a solution exists the algorithm will find it.