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GEA Worksheet

Goals

What might be the goals of the intelligent system?

The main goal of the intelligent system is to play a game of tag between two AIs trained through machine learning. To accomplish this, there will need to be two personas that an AI represents: the tagger and the one avoiding being tagged. Each will have to be intelligent enough to logically go about their goal (i.e. the tagger should use algorithms increasing its chance to tag the other, while the other should do the same to decrease its chances of becoming the tagger). After both of these personas are properly implemented using only two AIs, we will want to increase the complexity of the game by adding additional players that can get tagged. At the very least, the logic behind the tagger will have to change, as the most intelligent approach is different when there are multiple targets available.

Environment

What is the environment that the intelligent system will be adapting within?

Due to the nature of the game, there are at least two opponents with opposing goals. Both opponents will be placed into the same finite 3D or 2D space and their positions within it will be designated by coordinate values. Since this is a finite space, players will have to navigate inbounds. Obstacles may also be present within the playing space, which each player will have to take into account. Players will be able to collide with one another as well. Ideally each player should be able to intelligently avoid bumping into an obstacle or another player (if there's more than just one player being targeted).

Adaptation

How might the intelligent system adapt to the environment given the goals? How might its inner environment change?

Each player will have to react intelligently to the other's decisions. Each opponent must use their knowledge of the other's variables to effectively make decisions that will help them reach their goal. A player's velocity, acceleration, and the direction they are currently facing may be additional variables that each opponent will have to consider when deciding how to react ideally. The location of obstacles and the play space's boundaries are also important, as an intelligent reaction should be one that avoids a player getting stuck on an obstacle or in a corner.

If there are multiple opponents that can be tagged (not one-on-one), then the tagger will have to adapt to determine which one is the best to target at the time. Similarly, a player that is avoiding being tagged also has to consider the other player's being targeted, as the variables associated with those players (position primarily) will affect its optimal path (e.g. to avoid bumping into one another).