CIBot Cooperation Agent Description

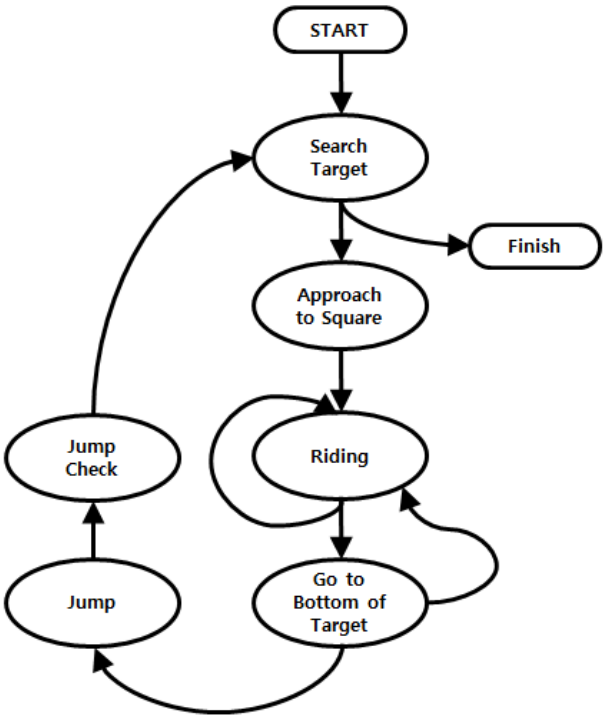

Figure 1. Agent Flow Diagram

In cooperation AI track, two character's cooperation is very important point. For cooperating each other, this track need to connection between the square and the ball agent. Our agents have some state. If the diamond(s) is(are) in recognition range of the square agent, it works alone. Monte Carlo Tree Search Algorithm is used in square's single-play.

MCTS Algorithm informs the agent of the optimal path always. But, this path creates some problems to apply real game. One of problems is that MCTS creates jagged path across the sky. In that case, the agent can't move along the path. We change movement cost from current node to the next node in all directions. Detail work flow of Square agent will explain on Square Agent Description document.

That is another problem that the square agent search unnecessary area. As a result, the agent keep going to not reach target. We recognize the part which can't reach to temporary obstacle to solve this problem.

If the square finish solo-playing, diamonds is reminded in a part that both agents not reach. In that case, our agents get into cooperation state. Figure 2 shows the basic position for

cooperation state. Basically, game cooperation means that the ball agent gets in the square agent and jumps high. The position like Figure 2 is called “Riding Position”.

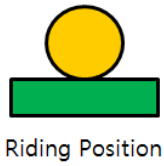

Figure 2. Agent’s Position

Once into the cooperation state, we pass over a course such as Figure 1. At first, the ball agent search target (one of diamonds) at a short distance. Next, the square agent approach a ball and the ball agent get in a square to make the riding position. Both agents with same velocity go to the bottom of target together. The square agent raises its height and the ball agent jump at the same time. Our agents should check the jump motion whether to jump or stay. If diamonds left more, agents repeat this process. Otherwise, it is finished.