|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Termination condition** | **Result** | **Reward** | | **Test?** |
| **Ego** | **Tester** |
| Episode ends | Draw |  |  | Uninteresting |
| Ego reaches destination | Ego win, tester loss |  |  | Uninteresting |
| Tester collides with ego (side/rear only) | Draw |  |  | Uninteresting |
| Tester collides with ego’s braking zone | Draw |  |  | Uninteresting |
| Tester collides with ego’s assertion zone | Ego loss, tester win |  |  | Interesting |

|  |  |  |
| --- | --- | --- |
| **Step condition** | **Reward** | |
| **Ego** | **Tester** |
| Tester percentage on road (e.g. ) |  |  |
| Ego relative offset from maintenance velocity (e.g. ) |  |  |
| Ego percentage distance from destination (e.g. ) |  |  |

**Assumptions:**

* timesteps (or seconds) per episode
* and
* is maximum cost that either player can accrue during episode
* Each player should prefer win over draw, and draw over loss
* Neither player should benefit by remaining stationary for duration of episode
* Tester should not benefit by remaining on road for duration of episode
* Facing no obstacles, ego should prefer to reach destination by following maintenance velocity rather than maximum velocity
* Each tester agent receives their rewards independently

**Observations:**

* may be a desirable property (i.e. winning by accruing maximum cost is no better than drawing by accruing no cost)
* Symmetric step costs/rewards are required to make it a zero-sum game, in addition to setting

**Example:**