Agent Documentation of ioh
for the 4th International AI Werewolf Contest

1. Overview

A function was implemented for all agents to speak a full-open proposal to be made on the first turn of the first day for all positions. Also, since the results of the verification showed that more verbose agents are more likely to be thought of as villagers and thus increase their survival rate, we made adjustments so that a different text is spoken each turn for villagers, seer, medium, bodyguard, werewolves, and possessed.

The proposal of full-open and some other statements may not be read by opponents in this tournament. However, we implemented the speaking function in the hope that the next and subsequent tournaments will use this agent as a reference to create diversity in the conversation.

2. Environment

Development environment : JDK11

path: org.aiwolf.IOH.IOHRoleAssignPlayer

3. Algotithm

3-1. role estimation

The role estimation function was added with reference to the way role estimation is done in human-to-human werewolves. In particular, TOKU, which is the base of this agent, estimated roles based on agents' statements, but did not estimate roles by comparing agents' statements with his own role, so we improved this feature. Specifically, we added functions to estimate, for example, that "a lying player who CO the same role as oneself is unlikely to be in the villager team" or that "even though I am werewolf, an agent who reports a fortune-telling result that I am not a werewolf is unlikely to be in the villager team".

3-2. VILLAGER

The full-open proposal function is implemented so that all agents are proposed to disclose their roles on the first turn of the first day. CO information is used for role estimation and so on.

Villager speaks a different text each turn. The content of the speech is linked to the function of role estimation, and the villager makes statements such as "will to vote", "request a vote", and "think agent X is a werewolf", while quoting the agent number that is most likely to be a werewolf.

3-3. SEER

A speech function similar to that of villager was added based on TOKU.

3-4. MEDIUM

Medium used to always CO on the first day, but was changed to CO, with a certain probability, when the medium result is black.

3-5. BODYGUARD

We considered it certain that the target of the guard is not a werewolf when a guard succeeds. Therefore, we thought it would be useful to share information about the target of the guard, so we added a function to report the target of the previous guard when the guard succeeds.

3-6. WEREWOLF

As with TOKU, a certain probability of seer CO. To avoid being executed early in the game, we added functions such as "avoidance of 3 COs", "bodyguard/medium/villager CO when votes are expected from more than 3 people", and "voting for other werewolf on the same team (line cutting)". Also, to increase the success rate of raids, added functions that "raids on agents with hunter CO" and "avoidance of re-raids on guarded agents".

3-7. POSSESSED

Instead of the possessed CO seer every time, it was changed so that possessed would also CO medium or bodyguard with a certain probability.