

Theory of Computer Games 2022 – Project 4

Overview: **Participate in the TCG 2022 Official Hollow NoGo Tournament.**

1. Fine-tune the Hollow NoGo players.
2. Use [Go Text Protocol \(GTP\)](#) to communicate with other programs via the internet.
3. Participate in the tournament **held in classroom EC324 from 17:30 to 21:30 on Jan 10.**

Specification:

1. The rules are the same as those in Project 3.
Except that **the thinking time of each player is 5 minutes for a game**, i.e., a game can last up to 10 minutes since both sides have 5 minutes.
2. The players **need to be launched by using the gogui-server** and play against opponents via the internet connection.
 - a. During the tournament, **you are responsible for operating your program** and ensuring that it is functioning and accessible.
3. The tournament will be a [swiss-system](#) tournament.
 - a. There will be several rounds in the tournament. In each round, each program plays two games (as black and as white) against an opponent who matches its strength.
 - b. For each game in a round, the winner receives 0.5 points, i.e., a program receives 1.0 points if it wins two games against an opponent.
 - c. The ranking will be determined by the total points and the strength of the defeated opponents. For example, view the final results of the TCG 2021 tournament [here](#).

Methodology:

1. **Fine-tune and improve your program**, e.g., two-player paradigm, time management, RAVE, parallel MCTS, etc.
2. To participate in the tournament, **use the gogui-server to launch your program, then provide the publicly accessible IP address and the port number.**
 - a. Launch your program with a recognizable name, e.g., `--name="Pikachu"`.
 - b. TAs will collect the name, IP address, and port of your program. (TBA)
 - c. It is recommended to participate in the tournament on-site (**classroom EC324**); however, the [online alternative](#) will still be available.
3. **You are welcome to use your machine**, i.e., no limitation on computer resources.
 - a. Make sure that there is a stable internet connection, and that **there is no firewall that prevents your program from being connected.**
 - b. The “gogui-server” command itself only requires a Java runtime. If you need to run your program without a bash environment, just install Java and use the gogui-server command directly. Check the provided script (run-gogui-server.sh) for more details.
 - c. For participants who want to use TCG workstations, due to the limited number of TCG workstations, TAs will organize and allocate the use of machines. (TBA)
4. There will be a simulation tournament before the official one. (TBA)
 - a. It is recommended to **participate in the simulation tournament.**

Scoring Criteria:

1. **Ranking (100 points):** Calculated by $\left[100 - 30 \times \left(\frac{\text{Ranking}-1}{\#\text{Participants}-1}\right)\right]$.
 - a. Assuming there are only 4 participants whose rankings are 1, 2, 2, and 4, their scores will be 100, 90, 90, and 70, respectively.
2. **Report (10 points, optional):** Graded according to the completeness of the report.
 - a. Summarize the methods used, improvements, and others.
3. Penalties:
 - a. **Time limit exceeded (lose that game).**
 - b. **Illegal action (lose that game).**
 - c. **Program crash or connection lost (lose that game):** Nevertheless, if it is not your fault, we will restart that game.
 - d. **No submission (-10 points):** If you forget to submit the source to the Project 4 page on the e3 platform, points will be deducted.
 - e. **No version control (-30%):** If it is found that there is no version control during the spot check, points will be deducted.
4. The final grade is the sum of the indicators minus the penalties, up to a maximum of 100 points.
 - a. Note that the report is optional. **You can choose NOT to submit a report.**

Submission:

1. The submitted files **should be archived as a ZIP file** and **named ID . zip**, where **ID** is your student ID, e.g., 0356168 . zip.
 - a. Pack your **report, source files, makefiles**, and other relative files.
 - b. Submit the archive through the E3 platform.
 - c. Do not upload the version control hidden folder, e.g., the .git folder.
2. Version control (e.g., GitHub or Bitbucket) is required during the development.