

EVOLUTIONARY TASK FORCE

SUMMARY OF WEEK 4

In Week 4 we obtained the first significant results produced by the Evolutionary Task Force as such. In particular, subtask-force 4 published the results of the simulator benchmarks by email. The report will be made available through the SEC Blog later for the whole Symbicator. To this end, we will create a dedicated section on the blog page for each subtask-force to accommodate all those reports with all those results we hope to get in the future....

Subtask-force 1 (morphogenesis) finalized the list of approaches being compared, one with explicit representation and three with implicit representation, a.k.a. virtual embryogeny. To be specific:

- Wenguo: explicit, well-formed expressions
- Ronny: implicit, AHHS
- Yao-Yao: implicit, GRN
- Michele: implicit, probabilistic cellular automaton

Everybody is working on his/her implementation, some have experimental results already, and the group will have a skype meeting to decide on the experimental conditions and details to be used by everybody. This will guarantee that the results will be comparable.

Subtask-force 2 (organism control) has a list of four options as well.

- Evert: CPG controller
- Florian: CPG controller (different one)
- Yao-Yao: GRN controller
- Juergen, Heiko: AHHS controller

Everybody is working on his implementation and the group already had a skype meeting to decide on the experimental conditions and details to be used. Details are reported on the SEC Blog. Subtask-force 1 and Subtask-force 2 will discuss their decisions on the experimental details to prevent unnecessary divergence.

Subtask-force 3 (internal rewards) had no progress to be reported this week.

Subtask-force 4 (simulator) finished and reported the first set of benchmark tests. The experiments measure the simulation speed (simulated time / real time ratio) for up to 50 robots under two conditions: in an all-swarm mode and in a multiple snakes mode, with and without using IR sensors. The good news is that using these sensors does not slow down the simulations. The bad news is that for more than about 6 robots the simulation is slower than real time. For 50 robots r is about one eighth of real time. NB. Guess what this means for 100 robots for 100 days ☺.

Furthermore, there is a growing need for a well working simulator and the related know-how at all partners. This week we will try to arrange a web-based (skype?) tutorial led by Prague.

For further details please consult the SEC Blog: <https://symbion-ec.wikidot.com/>