

EVOLUTIONARY TASK FORCE

SUMMARY OF WEEK 17 (21 – 27 FEBRUARY 2012)

HABEMUS PAPAM!

Recall, that a crucial step in our demonstration is the morphogenesis phase. In this phase the robots go from a swarm to an organism. An essential part in this phase is the actual physical docking of robots on the correct sides of the robots already in the organism – in other words, this is the birth of an organism. Wenguo has previously designed an approach to this, based on a finite state machine. This was implemented and tested first in the Stage simulator and used in Robot3d with Stage in the background as a shortcut. Now Berend with help of Lutz and Vojta succeeded in fully porting Wenguo's approach into Robot3D. This is a real milestone that means that the different (explicit and implicit) representations for organism shapes can be tested and compared in Robot3D!

S/T details:

Subtask-force 1 (Morphogenesis)

Explicit approach: Christopher implemented the crossover operator, however preliminary tests indicate that it may not be that evolvable. We will do more experiments to investigate this.

Implicit approach 1: Ronny/Markus@Graz are currently implementing in Robot3D, targeting the demo. Preliminary demonstrations in video (with robot3d) are available.

Implicit approach 2: Yaoyao returned from a 5 weeks vacation break. He will catch up with the recent developments and decide which of his approaches to incorporate in the comparisons.

Subtask-force 2 (Organism control)

Juergen concluded his visit to Amsterdam. He and Berend set up an experimental plan for the first (?) joint publication within our task force. The paper will be about comparing AHHS and CPG based controllers in robot organisms that evolve the ability to walk.

Subtask-force 4 (Integration and Joint Experimentation)

a) Cloud computing environment

Vojta tested images with Ubuntu 11.10 and Robot3d. It works on the department's cloud, but there are two issues: 1. the cloud nodes have no graphics, thus it must be emulated; 2. computing on the cloud is slower (~9 times) than on a normal computer.

b) Response to 'call for computers'

Only one response from Anne, who tries to obtain some virtual machines from their ISP. These will be probably without graphics card, hence virtual framebuffer (VFB) will be necessary to run Robot3d. Vojta configured VFB on their own server (12 cores, 2.8 GHz) to setup and run benchmarks to see how fast it is.

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