The Register®
Biting the hand that feeds IT

Original URL: http://www.theregister.co.uk/2009/11/09/iberian_insect_intelligence/

Spanish Army builds ant-colony AI conquistador algorithm
Iberian insect intelligence to plan 'actual strategy'

By **Lewis Page**

Posted in Applications, 9th November 2009 12:28 GMT

Free whitepaper – PC-disable protects lost and stolen notebooks

Spanish computer researchers and army officers say they have developed an algorithm based on the behaviour of ant colonies which can plot "the best path" through battlefields for manoeuvring troops. The general-ware has apparently been tested in a "mini-simulator" developed by modifying the computer game *Panzer General*.

The AI software is known as a "multiobjective ant colony optimization (MOACO) algorithm". It was applied to the problems of battlefield command by a team including computing specialists from the University of Granada and military officers from the Spanish army's Doctrine and Training Command.

According to Antonio Miguel Mora García of Granada uni's computer architecture and technology department, the ant-colony-in-a-box system can look at a battlefield and plot out the best route to be followed across it by a military unit.

> Specifically, this research work has developed a software that would allow the army troops to define the best path within a military battlefield, considering that such path will be covered by a company and this must consider the security criteria (reaching their destination with the lowest number of casualties) and speed (reaching their destination as quickly as possible).

In addition to García and his academic colleagues, Lieutenant-Colonel Millán and Major Torrecillas of the Spanish Army Corps of Infantry also contributed to the design of the insectoid-general system, dubbed CHAC. Apparently CHAC incorporates both "heuristic and pheromone information" and "the dominance concept of multiobjective optimization problems".

Having designed CHAC, García has now reportedly tested it out in his new simulated battlefield for ant-colony-directed tank war, which "started from the battlefields present in the videogame Panzer General™, defining later the necessary properties and restrictions to make them faithful to reality".

Apparently the Spanish Ministry of Defence has been sufficiently impressed with the software's simulated performance that "in the long term [the MoD] could incorporate some of the features of the new simulator for the design of actual military strategies".

Alternatively, according to García, "it could also be useful to solve planning problems for the distribution of goods, trying to serve the highest possible number of customers starting from a central warehouse, considering the lowest possible number of vehicles".

The English-ish announcement from Granada Uni is here (http://prensa.ugr.es/prensa/research/verNota/prensa.php?nota=605), and a relevant subscriber paper can be found here (http://portal.acm.org/citation.cfm?id=1552335.1552341&coll=GUIDE&dl=GUIDE&CFID=60639219&CFTOKEN=90636669). An earlier free arXiv version of the paper is here (http://arxiv.org/abs/cs/0610113). ®

Related stories

US military cyber force activated (19 August 2009)
http://www.theregister.co.uk/2009/08/19/24th_air_force_activated/
Smart-map battle network for footsoldiers gets $12m demo (29 May 2009)
http://www.theregister.co.uk/2009/05/29/ground_soldier_ensemble_raytheon_deal/
DARPA seeks self-aware AI robot mega-tanks (18 February 2009)
http://www.theregister.co.uk/2009/02/18/darpa_self_aware_tanks/
DARPA seeks 'Deep Green' battle computer (20 July 2007)
http://www.theregister.co.uk/2007/07/20/software_generals_for_us_army/