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Education

Doctor of Philosophy in Computer Science, University of Texas at Austin, August, 2003.
Bachelor of Arts in Geography, Clark University, Worcester, MA, 1991.

Research Summary

My research has focused on using artificial evolution to automatically design neural network solutions to reinforcement learning tasks. This general approach can potentially provide a way to solve complex real-world control problems in areas such as aerospace and autonomous robotics where it is often too difficult to design effective controllers by conventional engineering methods. In addition to developing algorithms that can solve such tasks, I am also interested in studying techniques for making evolved controllers robust so that they can successfully make the transition from simulation to the real world, and therefore actually be useful in industry.

Publications

Faustino Gomez (2003). Robust Non-Linear Control through Neuroevolution. PhD Thesis. AI-TR-03-303, Department of Computer Sciences, University of Texas at Austin.

Faustino Gomez and Risto Miikkulainen (2003). Active Guidance for a Finless Rocket through Neuroevolution. In Proceedings of the Genetic and Evolutionary Computation Conference (GECCO-03, Chicago).

Faustino Gomez, Doug Burger, and Risto Miikkulainen (2001). A Neuroevolution Method For Dynamic Resource Allocation On A Chip Multiprocessor, In Proceedings of the International Joint Conference on Neural Networks (IJCNN-01, Washington DC), 2355-2361. Piscataway, NJ:IEEE, 2001.

Faustino Gomez and Risto Miikkulainen (1999). Solving Non-Markovian Control Tasks with Neuroevolution. In Proceedings of the International Joint Conference on Artificial Intelligence (IJCAI-99, Stockholm, Sweden), Denver: Morgan Kaufmann.

Faustino Gomez and Risto Miikkulainen (1998). 2-D Pole Balancing with Recurrent Evolutionary Networks. In Proceedings of the International Conference on Artificial Neural Networks (ICANN-98, Skovde, Sweden), 425-430. Berlin, New York: Springer.

Faustino Gomez and Risto Miikkulainen (1997). Incremental Evolution of Complex General Behavior Adaptive Behavior, 5:317-342.

Available at: <http://nn.cs.utexas.edu/pub-list.php>

Awards

Winner of Best Paper in Real World Applications at the Genetic and Evolutionary Computation

Conference (GECCO-03) for "Active Guidance for a Finless Rocket through Neuroevolution."

Software

ESP C++ package. Implementation of the Enforced SubPopulations algorithm
available at:

<http://nn.cs.utexas.edu/soft-list.php>