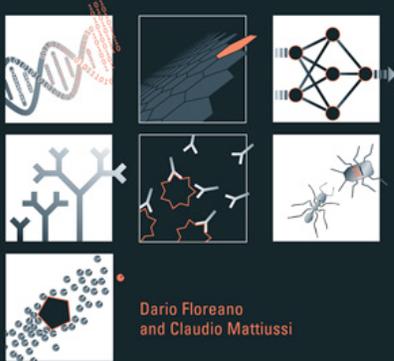


Bio-Inspired Artificial Intelligence | Companion website

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Bio-Inspired Artificial Intelligence

THEORIES, METHODS, AND TECHNOLOGIES



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MIT Press

659 pp., 290 illus.
September 2008

ISBN-10: 0-262-06271-2
ISBN-13: 978-0-262-06271-8

Course Exercises

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Comments and suggestions are welcome. Please send any feedback, comments, and corrections to [Claudio Mattiussi](#)

1 Evolutionary Systems

Operating Systems Requirements

Genetic algorithms for function optimization
Developed by [Daniel Marbach](#) at LIS

Win, Mac, Linux

[Matlab](#)

Genetic programming (from Wikipedia)
Java, .NET, C++, Matlab, Perl, Python, and Ruby implementations available

Win, Mac, Linux

Simulated Annealing demo (Java applet)
Heaton Research

Win, Mac, Linux

[JAVA](#)

Tierra ecosystem
Developed by [Tom Ray](#)

Win, Linux

AVIDA
Developed by Chris Adami and Richard Lenski

Win, Mac, Linux

Evolution of a simple Programmable Array Logic (PAL)
Developed by [Daniel Roggen](#) at LIS

Win

[PALEv](#)

2 Cellular Systems

Operating Systems Requirements

Cellular Automata
Developed by [Thomas Schaffter](#) and [Claudio Mattiussi](#) at LIS

Win, Mac, Linux

[Matlab](#)

Experiments with Mirek's Celebration
Developed by [Mirek Wojtowicz](#)

Win, Mac, Linux

[JAVA](#)

3 Neural Systems

Operating Systems Requirements

Hodgkin-Huxley Neuron Model (Java applet)
Developed by Thomas Pollinger.

Win, Mac, Linux

[JAVA](#)

Perceptron (Java applet) Developed by Fred Corbett.	Win, Mac, Linux	JAVA
Supervised Learning Algorithms for Neural Networks Developed by Peter Durr at LIS	Win	JavaNNS
Kohonen Self-Organizing Maps Developed by Claudio Mattiussi at LIS	Win, Mac, Linux	Mathematica
Associative Memory: Hopfield Network (Java applet) Developed by Olivier Michel	Win, Mac, Linux	JAVA
Echo State Network C++ library developed by Georg Holzmann	Win, Mac, Linux	
Spiking Neural Network and Liquid State Machine	Win, Mac, Linux	Amygdala
Stuttgart Neural Network Simulator Developed at University of Stuttgart Maintained at University of Tübingen	Win, Mac, Linux	
Neural Network Source Codes Developed by Japan Singapore AI Centre	Win, Mac, Linux	

4 Developmental Systems

Operating Systems Requirements

powerPlant	Win, Mac, Linux	OpenGL
Branching: L-system Tree (Java applet)	Win, Mac, Linux	JAVA
Fractal figures generated using L-systems (Java applet)	Win, Mac, Linux	JAVA

5 Immune Systems

Operating Systems Requirements

Artificial Immune Systems (Java applet) Developed by Peter Worth	Win, Mac, Linux	JAVA
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6 Behavioral Systems

Operating Systems Requirements

Evorobot1.1 Developed by Stefano Nolfi	Win	Microsoft Visual C++
Behavior-based Robotics Developed by Jean-Christophe Zufferey at LIS	Win, Mac, Linux	Webots
Evolution of neural controllers for mobile robots Developed by Sara Mitri at LIS	Win, Mac, Linux	Webots
Average Landmark Vector navigation in a Robot Developed by Steffen Wischmann at LIS	Win, Mac, Linux	Matlab
Evolution of robot morphologies Developed by Markus Waibel at LIS	Win, Linux	Framsticks (free version available)

7 Collective Systems

Operating Systems Requirements

BOIDS (Java applet) Developed by Yoshihiro Sakamoto. Original version of BOIDS developed by Craig Reynolds.	Win, Mac, Linux	JAVA
Ant Colony Optimization Developed by Pawel Lichocki at LIS	Win, Mac, Linux	Matlab

