Bridging Natural and Artificial Evolution

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Abstract

In this talk I will show how artificial evolution can be used to address biological questions and explain phenomena for which there is no fossil record or no experimental evidence, such evolution of behavior, altruism, and communication. I will give examples related to insects and plants. Central to this endeavor is how selection mechanisms are applied and interpreted. I will also show how selection pressure can be lifted in artificial evolution and lead to open-ended evolution in dynamic and changing environments.

Categories and Subject Descriptors

I.2.9 Computing Methodologies, ARTIFICIAL INTELLIGENCE: Robotics -- Autonomous vehicles

Keywords

Evolutionary computation; robotics

Short Bio

Prof. Dario Floreano is Director of the Laboratory of Intelligent Systems at EPFL Switzerland and Director of the Swiss National Center of Robotics. His research focuses on the convergence of biology, artificial intelligence, and robotics. He has published more than 300 peer-reviewed papers, which have been cited more than 10K times, and four books on the topics of evolutionary robotics, bio-inspired artificial intelligence, and bio-mimetic flying robots with MIT Press and Springer Verlag. He is member of the World Economic Forum Council on robotics and smart devices, co-founder of the International Society of Artificial Life, Inc. (USA), co-founder of the aerial robot company senseFly, member of the editorial board of 10

professional journals, and member board of numerous professional societies in robotics and artificial intelligence. He is also active in the public understanding of robotics and artificial intelligence, delivered more than 150 invited talks worldwide, and started the popular robotics podcast Talking Robots (now The RobotsPodcast).



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