

Josh C. Bongard

Assistant Professor of Computer Science

Education

BSc, Computer Science, McMaster University, Canada, 1997

MSc, Evolutionary and Adaptive Systems, University of Sussex, 1999

Ph.D., Computer Science, University of Zurich, 2003

Postdoctoral Associate, Department of Mechanical and Aerospace Engineering, Cornell University 2003-2006



Research Areas

Evolutionary computation, evolutionary robotics, embodied artificial intelligence, system identification, physics-based simulation

Courses

Software Engineering

Human-Computer Interaction

Dr. Bongard has been a member of the computer science faculty since 2006, and brings a wide experience in interdisciplinary research to the University of Vermont. After having conducted research in institutions spanning four countries, and in departments dedicated to traditional computer science (McMaster), the interface between computational science and biology (Sussex), artificial intelligence (Zurich) and robotics (Cornell), Bongard brings a unique perspective to the growing research community in the department. Bongard also gained industry experience when he served as a software engineer for Computing Devices Canada, where he developed communication software for the Canadian army and the U.S. Marines.

In the past year Bongard has been awarded \$392,391 in federal and private grants. He has published 37 research papers, including recent publications in *Science* and the *Proceedings of the National Academy of Science*. Bongard has received several international awards, including being inducted into the 2007 cohort of Microsoft New Faculty Fellows (which includes an unrestricted gift of \$200,000 for establishing a research presence), and being elected one of the TR35 in 2007, MIT *Technology Review* magazine's 35 young innovators under the age of 35.

Bongard's work on resilient machines—robots that can autonomously recover from unanticipated situations—have earned him

international recognition. Bongard and his robot have appeared in both national and international media, including appearances on the *Discovery Channel*, write ups in *Nature* and *Science* news, *USA Today*, and *Slate.com* cited his research as one of the five biggest neuroscience developments of 2007.

Selected Publications

Bongard, J., Zykov, V., Lipson, H. (2006). Resilient machines through continuous self-modeling. *Science*, 314: 1118-1121.

Bongard J. and Lipson H. (2007). Automated reverse engineering of nonlinear dynamical systems. *Proceedings of the National Academy of Sciences*, 104(24): 9943-9948.

Pfeifer R. and Bongard J. (2006) *How the Body Shapes the Way We Think: A New View of Intelligence*, Cambridge, MA: MIT Press.

Current Grants

P.I. for a 2007 Microsoft New Faculty Fellowship, Microsoft Research, \$200,000, 6/1/2007—

P.I. for “Exploiting ‘Like Me’ Hypotheses for Learning Robots”, National Science Foundation, \$192,391, 10/1/2007—9/31/2009

Participant, “Complex Systems Modeling for Environmental Problem Solving”, National Science Foundation, \$6,750,000 10/1/2007—9/31/2010