



The Robotic Scientist

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For centuries, scientists have attempted to identify and document analytical laws that underlie physical phenomena in nature. Despite the prevalence of computing power and data in scientific inquiry, finding natural laws and their corresponding equations has resisted automation. A key challenge to finding analytic relationships automatically is defining algorithmically what makes a correlation in observed data significant and non-trivial. This challenge is becoming a critical bottleneck as we try to understand and control increasingly complex systems, from biology to engineering. Results will be shown for a variety of mechanical and biological systems, from robotics to metabolic networks.



Hod Lipson is an Associate Professor of Mechanical & Aerospace Engineering and Computing & Information Science at Cornell University in Ithaca, NY. He directs the Computational Synthesis group, which focuses on novel ways for automatic design, fabrication and adaptation of virtual and physical machines. He has led work in areas such as evolutionary robotics, multi-material functional rapid prototyping, machine self-replication and programmable self-assembly. Lipson received his Ph.D. from the Technion - Israel Institute of Technology in 1998, and continued to a postdoc at Brandeis University and MIT. His research focuses primarily on biologically-inspired approaches, as they bring new ideas to engineering and new engineering insights into biology. For more information visit <http://www.mae.cornell.edu/lipson>.