

## **Curriculum Vitae**

**Hod Lipson, Ph. D.**

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### **Education**

Nov 94-Oct 98 Technion Israel Institute of Technology – Ph.D. Mechanical Engineering. Thesis Title: “Reconstruction of a 3D object from a single freehand sketch as means for CAD interface for conceptual design and analysis” (Advisor: Prof. M. Shpitalni). Awarded 1998  
Sep 85-Jul 89 Technion Israel Institute of Technology – B.Sc. Mechanical Engineering, Cum Laude. Awarded 1989

### **Academic Positions**

July 2015-present Full Professor, Mechanical Engineering, Columbia University, NY  
Apr 2015-June 2015 Full Professor, Mechanical & Aerospace Engineering and Computing & Information Science, Cornell University, Ithaca NY  
Feb 2008-Mar 2015 Associate Professor, Mechanical & Aerospace Engineering and Computing & Information Science,, Cornell University, Ithaca NY  
Jan 2010- Dec 12 Associate Director, Mechanical & Aerospace Engineering  
Jul 2001- Jan 08 Assistant Professor, Mechanical & Aerospace Engineering, and Computing & Information Science, Cornell University, Ithaca NY  
Nov 1998-Jul 2000 Lecturer, Mechanical Engineering Dept., Massachusetts Inst. of Technology, Cambridge MA. Advisor: Prof. Nam P. Suh  
Nov 1998-Jul 2001 Postdoctoral researcher, Brandeis Univ., Computer Science Dept., Brandeis University, Waltham MA. Advisor: Prof. Jordan Pollack.

### **Entrepreneurial activities**

#### **Startup Companies Founded**

2014	3DBio Inc.	Co-founder, Bioprinting (Active).
2011	Nutonian Inc.	Co-founder, Scientific Data Mining (Active).
2001	NetTrust Inc.	Co-founder, Certified Email Services (Inactive).
1994	Trilogical Inc.	Co-founder, GPS tracking (Active).

### Editorial Positions

2013-2015 Editor-in-Chief, 3D Printing and Additive Manufacturing (3DP), Mary Ann Liebert Publishing

### Professional Positions

1989-1994	Israel Defense Force	Lt. Cmdr. (Navy) Active duty
1996-1997	ASI Inc.	Software developer, created optical calibration system for interference imaging, Haifa Israel
1987-1993	Zorba Technologies	Software developer, Sheet Metal CAD/CAM Expert System, Winterweijk, Netherland

### Teaching

Fall 2017	Columbia	<b>Evolutionary Computation</b> (MECS 4510, enrollment TBD)
Spring 2017	Columbia	<b>Digital Manufacturing</b> (MECE 4606, enrollment 51)
Spring 2017	Columbia	<b>Kinematics of Machines</b> (MECE 3401, enrollment 9)
Fall 2016	Columbia	<b>Machine Design</b> (MECE 3409, enrollment 70)
Spring 2016	Columbia	<b>Digital Manufacturing</b> (MECE 4606 enrollment 36)
Fall 2015	Columbia	Teaching leave (due to move from Cornell to Columbia)
Spring 2015	Cornell	Parental teaching leave (newborn)
Fall 2014	Cornell	<b>Evolutionary Computation (CS5724)</b> , Graduate course covering evolutionary computation and applications, enrolment ~20
Summer 2014	CAU	<b>3D Printing</b> (approx. 50 participants)
Spring 2013,14	Cornell	<b>Mechanical Engineering Synthesis (MAE2250)</b> on product design process, Required Introductory Sophomore course enrolment ~180
Fall 2012,13	Cornell	<b>Evolutionary Computation (CS5724)</b> , Graduate course covering evolutionary computation and applications, enrolment ~20
Fall 2009-11	Cornell	<b>Foundations of Artificial Intelligence (CS4700)</b> , Introduction to artificial Intelligence, enrollment ~100
Fall 2009-11	Cornell	<b>AI Practicum: (CS4701)</b> , project course in AI applications in physical robotics, enrollment 25
Fall 2007	Cornell	<b>AI Practicum: Robotics and embodied AI (CS473)</b> , project course in AI applications in physical robotics, enrollment 25
Fall 2002,4,6,8	Cornell	<b>Evolutionary Computation and Design Automation (CS750/MAE650)</b> , Graduate course covering evolutionary computation and applications, enrolment ~25
Spring 2001-8	Cornell	<b>Mechanical Engineering Synthesis (MAE225)</b> on product design process, Required Introductory Sophomore course enrolment ~120-140
Fall 2002,3,5	Cornell	<b>Data structures and algorithms for Computational Science (CIS409/MAE409)</b> , Advanced undergraduate / Beginning graduate course in, on algorithm design for non-CS majors, enrollment ~15

Fall 2001	Cornell	<b>Geometric Modeling and Computer Aided Design (MAE580)</b> , covering mathematical models of geometry and topology
Spring 2000	Brandeis	Topics in Computer Systems / Computer Aided Design and Geometric Modeling
Fall 2000	MIT	Axiomatic Design (Co-Lecturer)
1997-1998	Technion	Computational Geometry (Teaching Instructor)
1996-1997	Technion	Computer Aided Design Laboratory (Project Tutor)
1995-1997	Technion	Fluid Mechanics (Teaching Instructor)

### **Graduate and Postdoc Students**

#### **Current PhD Students (Committee chair)**

1. **Jonathan Blutinger**- 2017-present, “Food Printing”, (Mechanical Engineering)
2. **Oscar Chang** - 2016-present, “Autogenerative networks”, (Computer Science).
3. **Chad DeChant** - 2016-present, “Self-Awareness”, (Computer Science).
4. **Yazmin Feliz** – 2015-present, “3D Ultrasound”, (Mechanical Engineering)
5. **Joni Mici**, 2015-present, “Rapid Assemblers”, (Mechanical Engineering).
6. **Siyuan Chen** - 2015-present, “Data Smashing”, (Mechanical Engineering).
7. **Richa Batra** - 2014-present, “Particle Robotics”, (Mechanical Engineering).

#### **Graduated PhD Students (Committee chair)**

1. **Nick Cheney**, 2012-2017, “Automated Design of Embodied Machines”, (Comp. Biology).
2. **Igor Labutov**, 2010-2016, “Machine Teaching”, (Electrical Engineering).
3. **Jason Yosinski**, 2011-2016, “Deep learning”, (Computer Science).
4. **Jeff Lipton**, 2010-2015, 3D printing, (Field: Mechanical Engineering).
5. **Robert MacCurdy**, 2009-2015, Machine Self Reflection (Field: Mechanical Engineering).
6. **Jonas Neubert**, 2008-2014, Programmable Matter (Field: Mechanical Engineering). Currently at Zoho.com
7. **Ted Cornforth**, 2009-2014, “Reverse engineering dynamical systems”, (Field: Computational Biology)
8. **Daniel Ly**, 2009-2013, Automated Telescience (Field: Mechanical Engineering). Currently postdoc at Stanford U.
9. **John Amend**, 2008-2013, Jamming robotics: Programmable Phase Transition Materials (Field: Mechanical Engineering). Currently: Founder and CTO of Empire Robotics, Inc.
10. **Jonathan Hiller**, 2006-2011, Digital Manufacturing (Field: Mechanical Engineering). Currently Director of Engineering at Modular Robotics Inc.

11. **Michael Schmidt**, 2006-2010, Co-evolutionary System Identification (Field: Computational Biology). Currently Founder and CEO of Nutonian, Inc.
12. **Michael Tolley**, 2005-2010, Micro Self-Assembling Stochastic Robotics (Field: ME). Currently Faculty at University of California San Diego (UCSD).
13. **Daniel L. Cohen**, 2005-2010, 3D Bioprinting (Field: Mechanical Engineering). Currently Founder and CEO of 3DBio Inc.
14. **Evan Malone**, 2002-2008; Multimaterial Solid Freeform Fabrication of Active Systems (Field: MAE). Currently Founder and CEO of NextFab, Inc.
15. **Viktor Zykov**, 2003-2007, Damage Diagnosis and Repair in Robotic Systems (Field: MAE).

Graduated MSc Students (Committee chair)

1. **Cheryl Perich**, 2010-2012, “Parallel assembly using Electro Osmosis”, (Field: Mechanical Engineering).
2. **Charlie Richter**, 2010-2011, “Flapping flight – modeling, design, and control”, (Field: Aerospace).
3. **Nicholas Estevez**, 2004-2006, Functional Representations for Design.
4. **David Hejelle**, 2007-2009, Machine Metabolism (Field: Mechanical Engineering).
5. **Aaron Leftensy**, 2008-2010, Learning Dynamics (Field: Computer Science).

Master of Engineering Students advised

1. **Daw-Ran Liou** (2012) Diameter-changing sphere-like robots. (Mech)
2. **Rui Xiao** (2012) Robotics System Based on Variable Radius Mechanisms. (Mech)
3. **Matthew Fisher** (2012) Variable Strip Stamping Robot. (Mech)
4. **Mark Broomfield** (2011-2012) Fab@Home. (CS)
5. **Jean Rouge** (2011-2012) Parallel Physics Simulator. (CS)
6. **Bozhen Liu** (2012) Design and modify physical structure of robot. (Mech)
7. **Nicholas Perrotti** (2012) Fab@Home Project: Electronic Title pick and place. (Mech)
8. **Yongcheng Tai** (2012) Design and modify physical structure of robot. (Mech)
9. **Zanger Ingmar** (2011) Discovering Fundamental Vehicle Dynamics Equations. (Mech)
10. **Melendez Glenn** (2011) Multi Material 3D printer Tool head. (Mech)
11. **Ungnapatani Jesada** (2011) Design and Testing of Multimaterial 3D printed specimens. (Mech)
12. **Karen Ho** (2011) Predicting stress-strain curves for non-linear material models.(CS)
13. **Tao Liu** (2011) Teaching robots by demonstration. (CS)
14. **Shahruckh Mallick** (2011) 3D scanner with Kinect. (CS)

15. **Andrew Spielberg** (2011) N/A. (CS)
16. **Fangzhou Zhu** (2011) Teaching robots by demonstration. (CS)
17. **Karl Wolfgang Gluck** (2009-10) Fab Studio Fab@Home software. (CS)
18. **Adedamola Omotosho** (2009-2010) Learning robotic painter. (CS)
19. **James Francis Smith III** (2009-10) Fab@home ABS Extrusion head. (Mech)
20. **Charles Andrew Richter** (2009-10) Printable Ornithopters. (Mech)
21. **Patrick James Lingane** (2009-10) Locomotion dynamics of vibrating robots. (Mech)
22. **Gordon Michael Briggs** (2009) Evolutionary Design of RF Circuits. (CS)
23. **Denise Wong** (2009) Vibrating particle robot. (Mech)
24. **Kyle Johnson** (2008-9) 3D Sketch reconstruction. (CS)
25. **Carlos Aguilar** (2008), Robotic Painter. (CS)
26. **Clayton Chang** (2008) 3D Sketch reconstruction. (CS)
27. **Brandon Yee** (2008) 3D Sketch reconstruction. (CS)
28. **James Grossmann** (2008) Six-Dof 3D Printer. (Mech)
29. **William Edward Kimberly** (2007-2008) Amorphous fluidic robot simulation. (CS)
30. **Phelps Watson Williams** (2007-2008) Molecubes Electronics. (CS)
31. **Ryan Christopher Lovrien** (2007-2008) GPU for fluidic tetris. (CS)
32. **Daniel Paul Gicklhorn** (2007-2008) Evolutionary robotics in Phys-X. (CS)
33. **Adrian Wong** (2007-2008) Self-assembling 2D tiles. (ECE)
34. **Sean Williams** (2005-6) Extruder Controller Design. (CS)
35. **Keith Sheppard** (2005-6) Learning Control for “Cat in the Hat” Balancing. (CS)
36. **Mike Schmidt** (2005-2006) Symbolic Regression. (CS)
37. **Greg Studer** (2004-5) Self-replicating automata. (CS)
38. **Christopher Johnson** (2003-4) Dielectrophoresis Assembly. (Mech)
39. **Paul White** (2003-4) Stochastically reconfigurable modular robotics. (Mech)
40. **Mytilinaios Efstathios** (2003-4) Self-replicating Molecubes. (CS)
41. **Jeremy Weinstein** (2003-4) Modular Plunger tool for 3D Printing. (Mech)
42. **Diedrich Willers** (2003-4) Modular Plunger tool for 3D Printing. (Mech)
43. **Michael Chen** (2003-4) Web Service for Dynamics Simulation. (CS)
44. **Derrick Yuen** (2003-4) Digital Sketching. (CS)
45. **Jonathan Schoenberg** (2003-4) Evolved strategies for “Capture the Flag”. (ECE)
46. **Evan Khun** (2003-4) Evolutionary Design of @D Kinematics. (CS)
47. **Kian Rasa** (2003-4), 3D Printing of batteries. (Mech)
48. **Todd Issacson** (2003-4), 3D Printing. (Mech)

#### Visiting PhD students advised

1. **Gordon Klaus**, 2013-2014, Evolutionary Robotics (University of Oslo).
2. **Paul Grouchy**, 2011-2012, Evolutionary Robotics (University of Toronto).
3. **Hiroataka Moriguchi**, 2011, Evolutionary Robotics (University of Tokyo).
4. **Richardo F. Mendoza**, 2010, Modular robotics (University of Southern Denmark).
5. **Daniel Lobo**, 2009, Machine Metabolism (U. Malaga, Field: CB).
6. **Simon Fivat**, 2009, Tensegrity Machines (EPFL, Field: CB).
7. **Shu-Guang Li**, 2008, Flutter Energy Harvesting (Field: MAE).

#### Visiting Master students advised (Columbia)

1. **Drim Stokhuijzen**, 2015-2016, Food Printing (U Utrecht, Netherlands)
2. **Anastasia Markova**, 2016-2017, Deep Learning for crop identification
3. **Yorán Meijers**, 2017, Food Printing

#### Postdocs advised

1. **Zhou Zhang**, 2017-, Matter Compilers
2. **Aslan Miryev**, 2015-, Soft Actuators
3. **Jun Ogawa** (2015-2016) Evolutionary Robotics
4. **Petar Curkovic**, 2014-2015, Design Automation
5. **Shuguang Li**, 2014-2015, Morphing Robotics
6. **Navneet Bhalla**, 2014-2015, Self-Assembly
7. **Ishanu Chattopadhyay**, 2011-2014, Machine Learning.
8. **Daniel Ly** 2013-present, Automated Modeling
9. **Jonathan Platkiewicz**, 2013-2014, Haptic sensing.
10. **Sebastian Risi**, 2012-2013, Neuroevolution.
11. **Ben Finio**, 2012-2013, Manufacturing Education.
12. **Jeff Clune**, 2010-2012, Evolutionary design and modularity,
13. **David Kou**, 2010, CAD/CAM.
14. **Juan Zagal**, 2008-2010, Machine Self-reflection.
15. **Eric Schweikardt**, 2008-2009, Modular Robotics..
16. **Kyung-Joong Kim**, 2006-2009, Cognitive evolutionary robotics.
17. **Nicolas Lassabe**, 2008, Modular robotics
18. **Viktor Zykov**, 2008, Damage Diagnosis and Repair in Robotic Systems

19. **John Reiffel**, 2006-2007, Tensegrity robotics.
20. **Anupam Saxena**, 2005-2007, Inference of biological networks.
21. **Sanjeev Kumar**, 2004-2006, Algorithms for Musculoskeletal inference.
22. **Mark Masry**, 2004-2005, Algorithms for 3D Sketch understanding.
23. **Chandana Paul**, 2004-2005, Tensegrity Robotics
24. **Josh Bongard**, 2003-2006, Co-evolutionary algorithms for system design and analysis.

### **Honors and Awards Received**

- First place, Robotic Art competition, 2017 (RobotArt.com)
- Top 25 Book in China 2013 (out of 400,000 new books in Chinese)
- Elected Faculty to Tau Beta Pi Honor Society, 2013
- US National Academy of Engineering Annual Gilbreth Lecturer, 2012.
- Forbes “Top 7 Data scientists in the world”, 2011.
- MSNBC #1 must-see science videos of 2011.
- Best paper award in Physical Biology “Highlights of 2011”.
- Popular Science’s one of 25 most Awesome labs in the US, 2011.
- Discover Magazine’s 25 most important discoveries of 2009.
- ASME SMASIS’09 Honored Finalist Award, 2009.
- Cornell Hellenic Societies Faculty Award, 2008.
- Best paper of the year award. Rapid Prototyping Journal, 2008.
- Provost Distinguished Scholarship Award, 2008.
- Merrill Educator Award, 2008.
- ASME 2007 International Mechanical Engineering Congress and Exposition (IMECE) Best Presentation Award.
- Esquire Magazine Best & Brightest, 2007.
- Best paper Award, Genetic and Evolutionary Computation Conference (GECCO), 2007.
- Popular Mechanics Breakthrough Award, 2007.
- DARPA MTO Young Faculty Award, 2007.
- Outstanding Paper, Solid Freeform Fabrication (SFF’06).
- NSF Young Investigator CAREER award, 2006.
- ENTRY 2006 “Most important innovations in robotic technology”.
- Best-in-Tech 2005, MIT Technology Review (German Edition).
- Outstanding Paper, Solid Freeform Fabrication (SFF’05).

- Gold Medal for Human Competitive Automated Invention, GECCO 2005.
- Best Paper Award, International Conference on Advanced Robotics (ICAR'05).
- National Academies “Frontiers of Engineering” speaker.
- Silver Medal for Human Competitive Automated Invention, GECCO 2004.
- TIME Magazine’s “Most important events of 2000”.
- Biophysical Society “New and Notable”, 2001.
- Shaping The Future, EXPO’2000.
- Fischbach Postdoctoral Scholarship, 1998-1999.
- CIRP International F.W. Taylor Medal, 1997.
- Charles Clore Doctoral Fellowship, 1996.
- Miriam and Aaron Gutwirth Memorial Award, 1996.
- 1st Prize for Academic Innovation, *ITIM 9th Israeli Conference on CAD/CAM*, Tel Aviv, 1987.

#### **Refereed Journal Publications (published or in press)**

1. Miriyev A., Lipson H., (2017) , “Soft materials for soft actuators”, *Nature Communications* (in review)
2. Cellucci Daniel, MacCurdy Robert, Lipson Hod, Risi Sebastian (2017) “1D Printing of Recyclable Robots”, *IEEE Robotics and Automation Letters* (in review, 2<sup>nd</sup> cycle)
3. Amend J, Lipson H (2017) “The JamHand: Dexterous Manipulation with Minimal Actuation” **Soft Robotics** 4 (1), 70-80
4. Grouchy, P., D’Eleuterio, G. M., Christiansen, M. H., & Lipson, H. (2016). “On The Evolutionary Origin of Symbolic Communication”. **Scientific Reports**, 6.
5. Lipton, J. I., & Lipson, H. (2016). 3D printing variable stiffness foams using viscous thread instability. **Scientific Reports**, 6.
6. Lipton JI, Angle S, Banai RE, Peretz E, Lipson H, (2016) “Electrically Actuated Hydraulic Solids”, **Advanced Engineering Materials** 18 (10), 1710-1715
7. Lipton JI, Cutler M, Nigl F, Cohen D, Lipson H (2016) Additive manufacturing for the food industry, **Trends in Food Science & Technology** 43 (1), 114-123
8. Cheney, N., & Lipson, H. (2016). Topological evolution for embodied cellular automata. **Theoretical Computer Science**, 633, 19-27.
9. TW Cornforth, H Lipson (2015) A hybrid evolutionary algorithm for the symbolic modeling of multiple-time-scale dynamical systems, **Evolutionary Intelligence** 8 (4), 149-164



10. Platkiewicz, J., Lipson, H., & Hayward, V. (2016). Haptic Edge Detection Through Shear. **Scientific reports**, 6
11. J Neubert, H Lipson Soldercubes: a self-soldering self-reconfiguring modular robot system, **Autonomous Robots** 40 (1), 139-158
12. Chattopadhyay, Ishanu, and Hod Lipson. (2014) "Data smashing: uncovering lurking order in data." **Journal of The Royal Society Interface**, Vol. 11, no. 101 (2014): 20140826.
13. Neubert, J., Rost, A., and Lipson, H. (2014) "Self-Soldering Connectors for Modular Robots". **IEEE Transactions on Robotics**. Vol. 30, no. 6, pp. 1344-1357
14. MacCurdy, R., McNicoll, A., and Lipson, H. (2014) "Bitblox: Printable digital materials for electromechanical machines". **The International Journal of Robotics Research (IJRR)**. Vol. 33 no. 10, pp. 1342-1360
15. Lipson H., (2014) "Challenges and Opportunities for Design, Simulation, and Fabrication of Soft Robots" **Soft Robotics**. March 2014, 1(1): 21-27.
16. Bongard J and Lipson H, (2014) "Evolved Machines Shed Light on Robustness and Resilience", **Proceedings of the IEEE**, Vol.102, No. 5, pp. 899 - 914
17. Hiller J, Lipson H., (2014), "Dynamic Simulation of Soft Multi-Material 3D-Printed Objects", **Soft Robotics**, Soft Robotics. March 2014, 1(1): 88-101.
18. Athanasios G. Athanassiadis, Marc Z. Miskin, Paul Kaplan, Nicholas Rodenberg, Seung Hwan Lee, Jason Merritt, Eric Brown, John Amend, Hod Lipson and Heinrich M. Jaeger (2014) "Particle shape effects on the stress response of granular packings", **Soft Matter** 10, 48–59
19. Chattopadhyay, I., Kuchina, A., Suel, G. and Lipson, H. (2013) "Inverse Gillespie for inferring stochastic reaction mechanisms from intermittent samples." **PNAS**, July 22, 2013.
20. Lipton, J. and Lipson, H. (2013) "Adventures in Food Printing". **IEEE Spectrum**, May 31, 2013.
21. Ly, D.L. and Lipson, H. (2013) "Optimal Experiment Design for Coevolutionary Active Learning". **IEEE Transactions on Evolutionary Computation**. (In press)
22. Clune, J., Baptiste-Mouret, J-B., Lipson, H. (2013) "The evolutionary origins of modularity". **Proceedings of the Royal Society**, Accepted for publication.
23. Nigl, F., Li, S., Blum, J. E., Lipson, H. (2013) "Autonomous Truss Reconfiguration and Manipulation", **IEEE Robotics and Automation Magazine**, accepted for publication
24. Chattopadhyay I. and Lipson H. (2013) "Abductive learning of quantized stochastic processes with probabilistic finite automata", **Phil Trans R Soc A**, 371: 20110543.
25. Hockaday, L.A., Kang, K.H., Colangelo, N.W., Cheung, P.Y.C., Duan, B., Malone, E., Wu, J., Girardi, L.N., Bonassar, L.J., Lipson, H., Chu, C.C., and Butcher, J.T. (2012) "Rapid 3D

- printing of anatomically accurate and mechanically heterogeneous aortic valve hydrogel scaffolds”, **Biofabrication, Highlights of 2012**, 10.1088/1758-5082/4/3/035005. \*Selected for the Highlights of 2012 Biofabrication \*
26. Lipson H. (2012) “Thinking outside the CAD box: design in the age of 3-D printing”, **Mechanical Engineering**, Oct 2012
  27. Ly, D.L. and Lipson, H. (2012) “Learning Symbolic Representations of Hybrid Dynamical Systems”, **Journal of Machine Learning Research**, Vol. 13, pp.3585-3618.
  28. Hiller, J. and Lipson, H. (2012) “Automatic Design and Manufacture of Soft Robots” **IEEE Transactions on Robotics**, Vol. 28, No. 2, pp. 457-466.
  29. Saxena, A., Lipson, H., and Valero-Cuevas, F.J. (2012) “Functional inference of complex anatomical tendinous networks at a macroscopic scale via sparse experimentation”. **PLoS Computational Biology**, 8(11): p.1-17, 2012.
  30. Hockaday, L.A., Kang, K.H., Colangelo, N.W., Cheung, P.Y., Duan, B., Malone, E., Wu, J., Girardi, L.N., Bonassar, L.J., Lipson, H., Chu, C.C., Butcher, J.T (2012) “Rapid 3D printing of anatomically accurate and mechanically heterogeneous aortic valve hydrogel scaffolds”, **Biofabrication**, Vol. 4, 035005.
  31. Kurse, M.U., Lipson, H. and Valero-Cuevas, F.J. (2012) “Extrapolatable analytical functions for tendon excursions and moment arms from sparse datasets”, **IEEE Transactions on Biomedical Engineering**, Vol. 59, pp. 1572-1582.
  32. Guzek, J.J., Petersen, C., Constantin, S., and Lipson, H. (2012) "Mini Twist: A Study of Long-Range Linear Drive by String Twisting", **ASME Journal of Mechanisms and Robotics**, 4, 014501 (2012).
  33. Valsalam, V.K., Hiller, J., MacCurdy, R., Lipson, H., and Miikkulainen, R. (2012) "Constructing controllers for physical multilegged robots using the ENSO neuroevolution approach", **Evolutionary Intelligence**, Vol. 5, No. 1, 45-56.
  34. Amend, J. R. Jr., Brown, E. M., Rodenberg, N., Jaeger, H. M., Lipson, H. (2012) “A Positive Pressure Universal Gripper Based on the Jamming of Granular Material”, **IEEE Transactions on Robotics**, Vol. 28, pp. 341 – 350.
  35. Lipson, H. (2012) “Frontiers in Additive Manufacturing”, **The Bridge (National Academies)**, Vol. 42, No. 1, Spring 2012, pp. 5-12.
  36. Schmidt, M. D., Vallabhajosyula, R. R., Jenkins, J. W., Hood, J. E., Soni, A. S., Wikswa, J. P., et al. (2011). "Automated refinement and inference of analytical models for metabolic networks", **Physical Biology**, 8(5).

37. Garcia, R.F.M., Hiller, J.D., Stoy, K., Lipson, H. (2011) "A Vacuum-Based Bonding Mechanism for Modular Robotics", **IEEE Transactions on Robotics**, 27(5): 876-890.
38. Lipson, H. (2011) "Self-Reflective Architecture", **Cornell Journal of Architecture**, Vol. 8, pp. 16-23.
39. Tolley, M. and Lipson, H. (2011) "On-line assembly planning for stochastically reconfigurable systems", **International Journal of Robotics Research**, Vol. 30 (11).
40. Hiller, J., Miller, J, Lipson, H. (2011) "Microbricks for 3D Reconfigurable Modular Microsystems", **IEEE Journal of Microelectromechanical Systems**, Vol. 20, No. 13, pp. 1566-1584.
41. Kou, X.Y., Tan, S.T., Lipson, H. (2011) "A data-driven process for estimating nonlinear material models," **Applied Mechanics and Materials**, vol. 50-51, pp. 599-604.
42. Richter, C. and Lipson, H. (2011) "Untethered Hovering Flapping Flight of a 3D-Printed Mechanical Insect", **Artificial Life**, Vol. 17, No. 2, pp. 73-86.
43. Li, S., Yuan, J., and Lipson, H. (2011) "Ambient wind energy harvesting using cross-flow fluttering", **Journal of Applied Physics**, 109, 026104.
44. Cohen, D. L., Lo, W., Tsavaris, A., Peng, D., Lipson, H., Bonassar, L.G. (2011) "Increased mixing improves hydrogel homogeneity and quality of 3D printed constructs," **Tissue Eng (Part C Methods)**, 17(2):239-248.
45. Brown, E., Rodenberg, N., Amend, J., Mozeika, A., Steltz, E., Zakin, M., Lipson, H., Jaeger, H. (2010) "Universal robotic gripper based on the jamming of granular material," **Proceedings of the National Academy of Sciences (cover)**, Vol. 107, no. 44, pp. 18809-18814.
46. Ballyns, J.J., Cohen, D.L., Malone, E., Maher, S.A., Potter, H.G., Wright, T., Lipson, H., Bonassar, L.J. (2010) "An Optical Method for Evaluation of Geometric Fidelity for Anatomically Shaped Tissue Engineered Constructs", **Tissue Eng Part C Methods**. 2010 Aug, 16(4):693-703.
47. Rieffel, J., Valero Cuevas, F., Lipson, H. (2010) "Morphological Communication: Exploiting Coupled Dynamics in a Complex Mechanical Structure to Achieve Locomotion", **Journal of the Royal Society Interface**, Vol. 45.
48. Kalontarov, M., Tolley, M. T., Lipson, H., Erickson, D. (2010) "Hydrodynamically Driven Docking of Blocks for 3D Fluidic Assembly", **Microfluidics and Nanofluidics**, Vol. 9, pp. 551-558.
49. Tolley, M. T., Kalontarov, M., Neubert, J., Erickson, D., Lipson, H. (2010) "Stochastic Modular Robotic Systems: A Study of Fluidic Assembly Strategies", **IEEE Transactions on Robotics**, Vol. 26, pp. 518-530.

50. Hiller, J. and Lipson, H. (2010) "Tunable digital material properties for 3D voxel printers", **Rapid Prototyping Journal**, Vol. 16, No. 4, pp. 241-247.
51. Cohen, D. and Lipson, H. (2010) "Geometric feedback control of discrete-deposition SFF systems", **Rapid Prototyping Journal**, Vol. 16, No. 5, pp. 377-393.
52. Lipson, H. and Kurman, M. (2010) "Factory@Home: The Emerging Economy of Personal Fabrication", a report commissioned by the *Whitehouse Office of Science & Technology Policy*.
53. Chen, D.L., Lipton, J.I., Bonassar, L.J., Lipson, H. (2010) "Additive manufacturing for in situ repair of osteochondral defects", **Biofabrication**, Vol. 2, 035004.
54. Cornforth, T.W., Kim, K.J., Lipson, H. (2010) "Evolution of Analog Circuit Models of Ion Channels", **Lecture Notes in Computer Science**, Vol. 6274, pp. 157-168.
55. Rieffel, J., Valero-Cuevas, F., Lipson, H. (2010) "Morphological Communication: Exploiting Coupled Dynamics in a Complex Mechanical Structure to Achieve Locomotion", **Journal of the Royal Society Interface**, Vol. 45, pp. 613-621.
56. Schmidt, M.D. and Lipson, H. (2010) "Age-Fitness Pareto Optimization", **Genetic Programming Theory and Practice**, Vol. 8, pp. 129-146.
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#### **Other conference papers**

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272. Schmidt M. and Lipson H. (2005) "Co-evolution of Fitness Maximizers and Fitness Predictors", GECCO Late Breaking Paper.
273. Bongard J.B., Lipson H., (2005) "Reinventing the Wheel: Experiments in Evolutionary Geometry", GECCO Late Breaking Paper.
274. Anand, V., Lipson, H., Valero-Cuevas, F.J. (2005) "Blind Inference of Nonlinear Cable Network Topology from Sparse Data", GECCO Late Breaking Paper.
275. Lipson, H. (2004) "How to Draw a Straight Line Using a GP: Benchmarking Evolutionary Design Against 19th Century Kinematic Synthesis", GECCO Late Breaking Paper, GECCO 2004. **Silver Medal for Human Competitive Automated Invention**
276. Timm, R. W., Lipson, H. (2004) "Periodicity Emerges from Evolved Energy-Efficient and Long-Range Brachiation", *Proceedings of Genetic and Evolutionary Computation Conference*, Late Breaking Paper, GECCO'04.
277. Lipson, H. (2004) "Principles of Modularity, Regularity, and Hierarchy for Scalable Systems", *Genetic and Evolutionary Computation Conference* (GECCO'04) Workshop on Modularity, Regularity and Hierarchy.

#### **Theses**

278. Lipson, H. (1998) *An Interface For 3D Conceptual Design Based On Freehand Sketching*. *Ph.D. Thesis*, Mechanical Engineering Department, Technion – Israel Institute of Technology.

#### **Books**

##### **Trade books and monographs**

279. Lipson, H. and Kurman M. (2016) "Driverless: Intelligent cars and the road ahead", MIT Press
280. Lipson, H. and Kurman M. (2013) "Fabricated: The new world of 3D printing", Wiley Press.
281. Lipson, H. and Kurman M. (2010) "Factory@Home: The Emerging Economy of Personal Fabrication" Report Commissioned by the Whitehouse Office of Science & Technology Policy.

#### Edited Conference Proceedings

282. Hiroki Sayama, John Rieffel, Sebastian Risi, René Doursat and Hod Lipson (Eds.) *Artificial Life 14*, Proceedings of the Fourteenth International Conference on the Synthesis and Simulation of Living Systems (2014)
283. Lipson, H. and Thierens, D., et al., (Eds.): Genetic and Evolutionary Computation Conference, GECCO 2007, Proceedings, London, England, UK, July 7-11, 2007. ACM 2007, ISBN 978-1-59593-697-4.
284. Beyer, H.-G., O'Reilly, U.-M., Lipson, H., Blum, C., Dasgupta, D., Foster, J.A., Banzhaf, W., De Jong, E., Pelikan, M., Raidl, G., Deb, K., Zitzler, E., Arnold, E., Tyrrell, A., Cantu-Paz, E., Soule, T., Llorca, X., Watson, J.-P., Bonabeau, E., Mancoridis, S. (Eds.): Genetic and Evolutionary Computation Conference, GECCO 2005, Proceedings, Washington DC, USA, June 25-29, 2005. ACM 2005, ISBN 1-59593-010-8.
285. Lipson, H, Antonsson, E.K., Koza, J.R. (Eds.) Computational Synthesis: From basic building blocks to high level functionality, Papers from 2003 AAAI Symposium, March 24-26, 2003, Stanford CA, AAAI Press, ISBN 1-57735-179-7.

#### Book Chapters

286. Lipson, H. (2008) "The Inevitable Magic of Artificial Life," in Pfeifer R., (Ed.) *The Rediscovery of Intelligence*, pp. 114-115.
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289. Lipson, H. (2005) "Evolutionary Design and Evolutionary Robotics", *Biomimetics*, CRC Press (Bar Cohen, Ed.), pp. 129-155.
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293. Shpitalni, M., Lipson, H., (1998), "Product Development and CAD/CAM", in F.L.Krause, Ed., *Product Modeling*, Verlag, Berlin.

### **Book reviews**

294. Lipson, H. (2001) “Uncontrolled Engineering: A review of *Evolutionary Robotics*”, *Artificial Life* 7/4, pp. 419-424, book review.

### **Patents**

295. L. J. Bonassar, H. Lipson, D. L. Cohen, and E. Malone, inventors; Cornell Research Foundation, Inc., assignee. “Modular fabrication systems and methods.” Patent No. US 7,939,003, 2011.
296. H. Lipson, L. J. Bonassar, D. L. Cohen, and E. Malone, inventors; Cornell Research Foundation, Inc., assignee. “Modular fabrication systems and methods.” Patent No. US 7,625,198. 2009.
297. [8 other]

### **Invited Talks, Keynotes, and Colloquia**

1. Keynote, AI And Society, “The Six Waves of Artificial Intelligence”, Tokyo, Japan, Oct 10, 2017
2. Invited Presentation, Worlds Fair Nano Main Stage: “The Future of Robots”, Brooklyn NY, Sep 16, 2017
3. Keynote, ACM/Eurographics Symposium on Computer Animation (SCA) ‘17, “Self Simulating Systems”, Los Angeles, CA, July 28, 2017
4. Keynote, Genetic And Evolutionary Computation Conference, “Adversarial Coevolution”, Berlin, Germany, July 19, 2017
5. Keynote, GE Global Research, “Trends in Additive Manufacturing”, Niskayuna, NY, June 6 2017
6. Keynote, Earnest Young Compliance & Technology Forum, “Robotics, cognitive computing and machine learning — the fad or the future?”, New York NY, May 17, 2017
7. Invited Talk, Dyson, “Trends in Artificial Intelligence”, Palo Alto, CA, May 16, 2017
8. Invited Presentation, Guild 21, “Autonomous Vehicles: Will we need body shops?”, (online), May 11, 2017
9. Invited Talk, Thales, “Trends in Artificial Intelligence”, Palo Alto, CA, May 4, 2017
10. Keynote, Deming Forum, “The Six Waves of Artificial Intelligence”, Columbia Business School, New York NY, May 2, 2017
11. Invited Talk, Inter Dev Bank (IDB), “Trends in Artificial Intelligence”, Boston MA, April 22, 2017



12. Keynote, Automotive Dealer Council Meeting, “Driverless Cars and the road ahead”, Miami FL, April 21, 2017
13. Invited Talk, Singularity University IPP, “Convergence: Driverless Cars and AI”, Dan Francisco, CA March 30, 2017
14. Keynote, The Rubin Museum of Art, “AIs and Avatars”, New York, NY, March 29, 2017
15. Invited Talk, Singularity University Executive Program, “Driverless Cars and the future of the city”, Palo Alto, CA March 23, 2017
16. Invited Talk, Singularity University Executive Program, “Digital Manufacturing”, Palo Alto, CA March 21, 2017
17. Invited Talk, APS meeting, “The Robotic Scientist”, New Orleans LA, March 17, 2017
18. Keynote, Tate & Lyle Texturant, “Print and Eat – The story behind food printing”, Chicago IL, March 8, 2017
19. Invited Talk, Deutsche Telekom, “Artificial Intelligence”, Bonn, Germany, March 3, 2017
20. Keynote, Cultiv8, “Print and Eat – The story behind food printing”, Monterey, CA, March 1, 2017
21. Invited Talk, Next Era, “Trends in Artificial Intelligence”, Palm Beach FL, Feb 2, 2017
22. Invited Talk, Steelcase, “Trends in Artificial Intelligence”, Palo Alto CA, Jan 18, 2017
23. Keynote, Deloitte Executive Training, “The compounding exponentials of Artificial Intelligence”, New York NY, Jan 17, 2017
24. Keynote, Inside 3D Printing, “Additive Manufacturing – The next 25 years”, San Diego, CA, Dec 14, 2016
25. Keynote, Turkey Innovation Week, “The compounding exponentials of Artificial Intelligence”, Istanbul, Turkey, Dec 10, 2016
26. Keynote, Credit Swiss Bank, “The compounding exponentials of Artificial Intelligence”, Zurich, Switzerland, Dec 5, 2016
27. Colloquium, “Driverless cars and the road ahead”, Villanova University, Villanova, PA, Dec 2, 2016
28. Keynote, Israel Aerospace Industries, “Additive Manufacturing – The next 25 years”, Tel Aviv, Israel, Nov 24, 2016
29. Keynote, ASME ICME, “Automating Discovery in Mechanical Engineering”, Haifa, Israel, Nov 21, 2016
30. Keynote, CTO Forum Rethink Disruption, “The compounding exponentials of Artificial Intelligence”, Half Moon Bay, CA, Nov 4, 2016

31. Invited panelist, Citibank autumn dialogs, "Artificial Intelligence", San Francisco CA, Nov 2, 2016
32. Invited Briefing, Deutsche Telekom Board of directors, "Robotics and AI", (via skype) Oct 28, 2016
33. Keynote, Holmes Global PR Summit, "The compounding exponentials of Artificial Intelligence", Miami, FL, Oct 26, 2016
34. Invited Talk, Leadership organization of chief executives (YPO), "Exponential Trends in Robotics", Palo Alto, CA, Oct 24, 2016
35. Invited Presentation, The Rubin Museum of Art, "Chasing Consciousness", New York, NY, Oct 21, 2016
36. Invited Talk, Global Commercial Real Estate Association (SIOR), "Driverless cars and real estate", New York, NY, Oct 21, 2016
37. Colloquium, Purdue University, Mechanical Engineering, "Automating Discovery", West Lafayette, IN, October 20, 2016
38. Keynote, Kroger Inc. Strategic retreat, "Trends in Artificial Intelligence", Cincinnati OH, October 5, 2016
39. Keynote, Eli Lilly Strategic retreat, "Trends in Artificial Intelligence", Mexico City, Mexico, September 28, 2016
40. Colloquium, NYU Tandon School of Engineering, "Automating Discovery", Brooklyn NY, September 27, 2016
41. Keynote, Harman International Strategic Management, "Robotics and Artificial Intelligence", Montreal, Canada, September 20, 2016
42. Invited Talk, Singularity Summit, "Robotics and Artificial Intelligence", Amsterdam, Netherlands, September 12, 2016
43. Invited Talk, RWE, "Robotics and Artificial Intelligence", Essen, Germany, August 22, 2016
44. Invited Talk, Weber Shandwick, "Trends in AI", New York NY, August 2, 2016
45. Invited Talk, Google NY, "Automatic Scientific Discovery", New York NY, August 1 2016
46. Panel, Northeast ME Chairs meeting, "Makerspaces in ME Education", University of Pennsylvania Mechanical Engineering Dept., Philadelphia, PA, July 29, 2016
47. Invited Talk, "Exponential trends in Robotics", Hershey, PA, June 28 2016
48. Invited Talk, "Exponential trends in Artificial Intelligence", AXA, New York NY, June 14 2016
49. Invited Talk, "Can a robot turn a canvas into a masterpiece?", Google Conference on Computer Generated Art, San Francisco CA, June 1, 2016

50. Invited Talk, “Trends in Additive Manufacturing”, US Air Force Research Lab (AFRL), Dayton OH, May 26 2016
51. Panel, “Self-awareness”, NY Academy of Sciences, New York NY May 23, 2016
52. Colloquium, “Trends in Additive Manufacturing”, ETH Zurich, Zurich Switzerland, May 17, 2016
53. Keynote, “Robotics in Manufacturing”, Singularity University Exponential Manufacturing, Boston MA, May 10, 2016
54. Colloquium, “Automating Discovery: The robot Scientist”, Stanford University Biomedical Engineering Department, Palo Alto CA, May 9, 2016
55. Colloquium, “Automating Discovery: The robot Scientist”, TCNJ, College of Engineering, April 20, 2016
56. Plenary, “Can a robot turn a canvas into a masterpiece?”, MIT Conference on Computational Fabrication, Boston MA, April 19, 2016
57. Invited Talk, “Robotics and AI”, NexGen, Hong Kong, China April 13, 2016
58. Keynote, “Trends in 3D Printing”, Stratasys event, Denver CO, April 1, 2016
59. Invited Talk, “Trends in Robotics”, Dutch Royal Airforce retreat, Rotterdam Netherlands, March 31, 2016
60. Colloquium, “Automating Discovery: The robot Scientist”, University of Texas Southwestern Medical Center, Dallas TX, March 18, 2016
61. Invited Talk, “Exponential Trends in AI”, Procter & Gamble, Cincinnati OH, March 2, 2016
62. Invited Talk, “Exponential Trends in Robotics”, Walmart Corp, March 1, 2016
63. Keynote, “Trends in Artificial Intelligence”, Tec De Monterrey, Mexico City, Mexico, December 3, 2015
64. Invited Talk, “Exponential Trends in Robotics”, Singularity University, Johannesburg, South Africa, Nov 17, 2015
65. Plenary, “Creative Machines”, MIT Technology Review Annual Conference, Boston MA, November 3, 2015
66. Keynote, “Food Printing”, Food Vision USA, Chicago IL, October 29, 2015
67. Invited Talk, “The future of 3D Printing”, Makerbot Industries, Brooklyn NY, Oct 27, 2015
68. Invited Talk, “Robotics and AI”, Singularity University, Moffet Field CA, Oct 19, 2015
69. Colloquium, “Automating Discovery”, University of Rochester, Computer Science Department, Rochester NY, October 14, 2015
70. Keynote, “Additive Manufacturing for Long Term Care”, OnLok Sustainable Long Term Care Conference, UCSF, October 8, 2015

71. Invited Seminar, “AI And Robotics”, Naspers Media Retreat, San Francisco, CA, September 3, 2015
72. Keynote, “3D Printing - The next 25 Years”, Stratasys User Forum, Seoul, Korea, Aug 28, 2015
73. Keynote, “3D Printing - The next 25 Years”, Stratasys User Forum, Tokyo Japan, Aug 27, 2015
74. Keynote, “3D Printing - The next 25 Years”, Stratasys User Forum, Shanghai China, Aug 25, 2015
75. Invited Talk, “3D Printing - The next 25 Years”, USG/CENTRA, Washington DC, Aug 19, 2015
76. Keynote, “3D Printing - The next 25 Years”, ASME AM3D, Boston MA, Aug 3, 2015
77. Invited Talk, “Print and Eat - Challenges and Opportunities in Food Printing”, Florida Academy of Nutrition and Dietetics, Orlando FL, July 15, 2015
78. Keynote, “3D Printing - The next 25 Years”, Select Bio, Boston MA, June 8, 2015
79. Keynote, “3D Printing - The next 25 Years”, Potter County School District, June 17, 2015
80. Keynote, “3D Printing - The next 25 Years”, Nikkei Global ICT Summit, Tokyo Japan, June 9, 2015
81. Invited Talk, “Self-Aware Systems”, Northrop Grumman, Los Angeles, June 3, 2015
82. Invited Talk, “The Future of Robotics and AI”, Barclays Bank retreat, Johannesburg, May 27, 2015
83. Keynote Speaker, “Automated Modeling of Dynamical Systems”, SIAM Conference on Applications of Dynamical Systems, Snowbird, UT, May 21, 2015
84. Invited Talk, “The Future of Robotics and AI”, Caterpillar Retreat, Peoria IL, May 20, 2015
85. Keynote, “3D Printing - The next 25 Years”, BBC Executive Forum, New York, NY May 7, 2015
86. Invited Talk, “Print and Eat - Challenges and Opportunities in Food Printing”, General Mills Inc., Minneapolis, MN, May 5, 2015
87. Keynote, “3D Printing- The next 25 Years”, Materialise Annual User Forum, Brussels, Belgium, April 23, 2015
88. Keynote, “3D Printing- The next 25 Years”, Shenzhen Innovation Fair, Shenzhen, China, April 19, 2015
89. Invited Talk, “3D Printing- The next 25 Years”, The DOW Chemical Company, Houston Tx., April 7, 2015

90. Colloquium Speaker, “Sentient Robotics”, Georgia Tech Robotics Institute, Atlanta GA, March 4, 2015
91. Keynote Speaker, “The Next 25 Years of 3D Printing”, Tissue Engineering & Bioprinting: Research to Commercialization Conference, Boston, MA, Feb 9-10, 2015,
92. Colloquium Speaker, “The Next 25 Years of 3D Printing”, Clarkson University, Mechanical Engineering Dept, Potsdam NY, Feb 6, 2015
93. Invited Speaker, “Sentient Robotics”, Baidu BIG Talk, San Francisco CA, Jan 30, 2015
94. Keynote Speaker, “3D printing materials”, Welding, Joining and Additive Manufacturing International Conference (WJAM), Tel Aviv, Israel, January 18-20, 2015
95. Invited Speaker, “Print and Eat: The future of Food printing”, Food Systems Global Summit, Cornell University, Dec 8, 2014
96. Invited Speaker, “The Future of 3D Printing”, 3M, St. Paul MN, Nov 7 2014
97. Keynote Speaker, “3D printing materials”, New Horizons in 3D Printing and Digital and Additive Manufacturing, Stony Brook, Long Island, NY, Sep 30, 2014
98. Invited Speaker “The Robot Scientist”, Annual meeting of the NAE, Mechanical Engineering Section, Washington DC, September 29, 2014
99. Colloquium Speaker, “Automated discovery”, Princeton University ME Dept, Princeton NJ, Sep 19, 2014
100. Keynote Speaker, “The Future of 3D Printing”, DoD workshop on Multifunctional Materials, Arlington VA, Aug 18, 2014
101. Keynote Speaker, “The next 225 Years of 3D Printing”, Solid Freeform fabrication (SFF) 14, Austin TX, Aug 5, 2014
102. Invited Plenary Speaker, “The Robotic Scientist”, Unconventional Computation & Natural Computation (UCNC) 2014, London ON, Canada, July 15, 2014
103. Invited Speaker, “3D printing materials”, Wyss Symposium: Adaptive Bioinspired Materials, Boston MA, June 27, 2014
104. Plenary Beacon Lecturer, “Food Printing”, Institute of Food Technologists (IFT) Annual Meeting, New Orleans, LA June 23, 2014
105. Invited speaker, “Printing electronics”, Futurapolis, May 17, Toulouse France
106. Invited Speaker, “The Future of 3D Printing”, Science and Engineering Festival, Washington DC, April 24, 2014
107. Invited Speaker, “3D Printing: The promise and Peril”, James Madison University, Harrisonburg VA, April 24, 2014

108. Invited Speaker, “3D printing in Nanotechnology”, Nano 2014, Tel Aviv, Israel, March 25, 2014
109. Colloquium Speaker, “Food printing”, Hebrew University, Food Science Dept, Israel, March 23, 2014
110. Keynote Speaker, “The future of 3D printing in Education”, Society for Information Technology and Teacher Education (SITE), Jacksonville, FL March 18, 2014
111. Annual Winegard Visiting Lecturer, “The future of 3D printing: Principles and technologies”, University of Guelph, March 13, 2014, Guelph ON, Canada
112. Invited Speaker, “Additive Manufacturing as a Transformative Manufacturing Technology”, 2014 AAAS Annual Meeting, Chicago IL, Feb 13-17, 2014
113. Colloquium Speaker, “Additive Manufacturing as a Transformative Manufacturing Technology”, Carnegie Mellon University Robotics Institute, Pittsburg PA, Nov 22, 2013
114. Congress Wide Plenary, “The future of 3D printing”, ASME 2013 Mechanical Engineering Congress & Exposition, San Diego, California, November 15-21, 2013
115. Keynote Speaker, “Thinking outside the CAD box: Geometric design in the age of 3D printing”, SIAM Conference on Geometric and Physical Modeling (GD/SPM 13), Denver, Colorado, November 11 – 14, 2013.
116. Keynote, “The future of 3D printing: Principles and technologies”, Juniata College, Nov 6, 2013, Huntingdon, PA
117. Invited Speaker, “The future of 3D printing: Principles and technologies”, BP Headquarters, Oct 30, 2013, Houston TX
118. Invited Speaker, “What do robots dream of? What we can learn from how machines view themselves”, Industry Leader forum, Oct 29, 2013, New York NY
119. Keynote Speaker, “Automating Scientific Discovery: Distilling Natural Laws from Experimental Data, from particle physics to computational biology”, Volen Center for Complex Systems retreat, Woods Hole, MA, Oct 18, 2013
120. Keynote Speaker, “The future of 3D printing: The promise and peril of a machine that can make (almost) anything”, Toulouse, France, Oct 12, 2013
121. Invited Speaker, “Automating Scientific Discovery: Distilling Natural Laws from Experimental Data, from Robotics to Material Science”, AIRBUS, Toulouse, France, Oct 11, 2013
122. Colloquium speaker, “The future of 3D Printing”, Columbia School of Architecture and Design, September 27, 2013.

123. Colloquium speaker, “Automating Discovery”, Columbia Mechanical Engineering Department, September 27, 2013.
124. Keynote, “The future of 3D printing”, Maker Faire, Toronto ON, Canada, Sep 21, 2013
125. Colloquium, “The future of 3D Printing”, Mechanical Engineering Department, Northwestern Polytechnical University, Xi’an, China, June 28, 2013
126. Invited Speaker, “The future of 3D Printing”, 2013 International Forum on New Industry Revolution & Additive Manufacturing, Chinese Mechanical Engineering Society, Beijing, China, June 26, 2013
127. Invited Speaker, “The future of 3D Printing”, American Chamber of Commerce-China, Beijing, June 25, 2013
128. Keynote Speaker, “Digital Fashion”, 1st International Conference on Digital Fashion, London College of Fashion, London, UK, May 16 – 17, 2013.
129. Invited Speaker, National Academy of Sciences’ Committee on Science, Technology, and Law (CSTL), Washington, DC, May 13, 2013.
130. Invited Colloquium, “Scientific Data Mining”, Complex Systems, University of Alaska Anchorage, Feb 15, 2013
131. Invited Colloquium, “Scientific Data Mining”, Complex Systems, SUNY Binghamton, Binghamton NY, Feb 11, 2013
132. Invited Colloquium, “Accelerating Discovery”, Electrical Engineering Department, Technion - Israel Institute of Technology, Haifa, Israel, Dec 12, 2012
133. Invited Review Lecturer, Israel Physical Society Conference, “Accelerating Discovery”, Hebrew University, Jerusalem, Israel, Dec 9, 2012
134. Invited Speaker, “Jamming Matter for robotics applications”, US-Israel Emerging Technology Discussions, Boston MA, Nov 28, 2012
135. Invited Speaker, “Matter Compilers”, DMC 2012, Orlando FL, Nov 26, 2012
136. Invited Speaker, “The Future of 3D Printing”, NEXT: The Event for Technology, Manufacturing & Innovation, Syracuse, November 8, 2012.
137. Invited Speaker, “Citizen Science”, AAAI Fall meeting, Washington DC, Nov 2, 2012
138. Invited Speaker, “Jamming Robotics”, U of Chicago, Oct 28, 2012
139. Invited Colloquium, “Scientific Data Mining”, Stockholm University, Sweden, Oct 9, 2012
140. Invited Colloquium, “Scientific Data Mining”, EPFL, Lausanne Switzerland, Oct 8, 2012
141. Invited Speaker, “The Robotic Scientist”, Northwestern, Chicago IL. Oct 1, 2012
142. Plenary Gilbert Speaker, “Programmable Matter—The Shape of Things to Come”, National Academy of Engineering, Washington DC, Sep 30, 2012

143. keynote Speaker, "Digital Matter", Betascope 2012, Sep 22, 2012
144. Invited Colloquium, "Scientific Data Mining", Harvard University Applied Physics Dept, Boston MA, Sep 21, 2012
145. Invited Colloquium, "Scientific Data Mining", Harvard University Systems Biology Dept, Boston MA, Sep 20, 2012
146. Invited Speaker, "Self Reflecting Robotics", Annual Academy of Management meeting, Boston MA, Aug 4, 2012
147. Invited Speaker, "Evolutionary Robotics", Institute for Advanced Studies summer school in Theoretical Physics, Princeton NJ, July 19, 2012
148. Invited Speaker, "Digital Matter", Singularity University 2012, San Jose CA, Jun 26, 2012
149. Invited Speaker, "The new world of 3D printing", IdeaCity 2012, Toronto ON, Jun 13, 2012
150. Invited Speaker, "The Robotic Scientist", Stanford SLAC, Palo Alto CA. June 4, 2012
151. Invited Speaker, "Design in the age of 3D printing", Architectural Design Symposium, London UK, May 11, 2012
152. Invited Speaker, "Biologically Inspired Robotics", USA Science & Engineering Festival (USASEF), Washington DC, April 27, 2012
153. Invited Speaker, "Design in the age of 3D printing", Design for Manufacturing Forum, Brooklyn NY, April 26, 2012
154. Invited Speaker, "Eureka!", Microsoft Think Next, Tel Aviv, Israel, April 22, 2012
155. Invited Speaker, "Matter Compilers – Design in the age of 3D printing", Congress on the future of Engineering Software (COFES), Scottsdale AZ, April 13, 2012
156. Invited Symposium X Speaker, "Programmable Matter—The Shape of Things to Come", MRS Annual meeting, San Francisco CA, April 12, 2012
157. Seminar Speaker, "The Robotic Scientist", Caltech Astronomy Dept, Pasadena CA. April 11, 2012
158. Colloquium Speaker, "Automating Scientific Discovery", Brandeis University CS Dept, Waltham MA, April 5, 2012
159. Invited Speaker, "Automating Scientific Discovery", Signal processing and inference for the physical sciences, Royal Society, London UK, March 26, 2012
160. Invited Speaker, "Symbolic Data Mining", NECSI, Cambridge MA, Feb 17, 2012
161. Invited Speaker, "Bioinspired Robotics", Forum Informatik, Aachen, Germany, Jan 23, 2012
162. Invited Speaker, "My Robot is Smarter Than Yours: Cognitive Robotics and AI", Swissnex, San Francisco CA, January 19, 2012



163. Colloquium Speaker, "Programmable Matter", Rochester Inst. Of Technology, Rochester NY, Oct 26, 2011
164. Colloquium Speaker, "Machine Science", Princeton Plasma Physics Laboratory, Princeton NJ, Oct 25, 2011
165. Invited Speaker, "Data mining biological Systems", New Frontiers in Systems Biology, Rehovoth, Israel, Oct 3, 2011
166. Invited Speaker, "Frontiers in Additive Manufacturing", NAE US Frontiers of Engineering, Palo Alto, CA, September 19, 2011
167. Invited Speaker, "Programmable Matter", Perimeter Institute, Hawking wing opening ceremony, Waterloo ON, September 18, 2011
168. Invited Speaker, "Fab@Home", Maker Fair, Queens, NY, September 17, 2011
169. Colloquium Speaker, "Machine Science", Vanderbilt University, Nashville TN, Sep 8, 2011
170. Invited Speaker, "Machine Science", Acceleration Discovery: Human Computer Symbiosis 50 Years On, Park City, UT, July 25, 2011
171. Invited Speaker, "Reverse Engineering Stochastic Systems", Uncertainty in Artificial Intelligence (UAI11), Barcelona, Spain, July 16, 2011
172. Invited Plenary, "Reverse Engineering Dynamical Systems", International Conference on Complex Systems (ICCS 2011), Cambridge MA, June 27, 2011
173. Keynote Speaker, "Analysis by Synthesis", 2011 IEEE Congress on Evolutionary Computation (CEC 2011), New Orleans, LA, June 9, 2011
174. Invited Speaker, "Bioinspired Robotics", World Science Fest (WSF11), New York NY, June 4, 2011
175. Invited Plenary, "Soft Robotics", European Commission Future and Emerging Technologies (FET11), Budapest Hungary, May 5, 2011
176. Invited Panelist, "3D Printing Technologies", 3D/DC, Washington DC, April 28, 2011
177. Colloquium Speaker, "The Robotic Scientist", Union College CS Dept., Schenectady NY, April 21, 2011
178. Colloquium Speaker, "Reverse Engineering Dynamical Systems", University of Chicago Computation Institute, Chicago IL, March 7, 2011
179. Keynote Speaker, "Self Reflective Systems", Int. Workshop on Self Organizing Systems, Karlsruhe, Germany, February 24, 2011
180. Invited Speaker, "Bioprinting", American Association for the Advancement of Science (AAAS11), February 21, 2011

181. Invited Speaker, "Self Reflective Robotics", American Association for the Advancement of Science (AAAS11), February 19, 2011
182. Invited Speaker, "The Limits of Science", Science on Saturday Lecture Series, Princeton Plasma Physics Laboratory, January 29, 2011
183. Colloquium Speaker, "Self Reflective Machines", Psychology Dept., Indiana University, Bloomington IN, January 24, 2011
184. Colloquium Speaker, "Distilling Natural Laws from Experimental Data", Physics Dept., Weizmann Inst, of Science, Rehovoth, Israel, Dec 30, 2010
185. Colloquium Speaker, "Digital Materials", Pixel Club, Computer Science Dept., Technion - Israel Inst. of Technology, Haifa Israel, Dec 28, 2010
186. Invited Seminar, "Reverse Engineering Dynamical Systems", Los Alamos National Labs, Albuquerque NM, Dec 8, 2010
187. Keynote Speaker, "Mining Dynamical Systems - From Cognitive Robotics to Computational Biology", European Conference on Machine Learning (ECML 2010), Barcelona, Spain, September 22, 2010
188. Invited Speaker, "Automating Science", Philosophical Society of Washington, Washington DC, September 10, 2010.
189. Colloquium Speaker, "Analysis by Synthesis", Computer Science Dept, École Polytechnique Fédérale de Lausanne (EPFL) , Lausanne, Switzerland, September 5, 2010
190. Keynote Speaker, "Analysis by Synthesis", 9th International Conference on Evolvable Systems (ICES 2010), York, UK, September 6, 2010
191. Plenary Speaker, "Soft Evolutionary Robotics", 12th International Conference on the Synthesis and Simulation of Living Systems (ALIFE XII), Odense, Denmark, August 20, 2010
192. Invited Speaker, "Rapid Assemblers", Fab6, Amsterdam, Netherland, August 18, 2010
193. Invited speaker, "Automating Scientific Discovery", Princeton Institute for Advanced Studies, Princeton NJ, 15 April 2010
194. Invited speaker and panelist, "Self Reflective Architecture", Columbia Graduate School of Architecture, New York NY, 12 April 2010
195. Invited Speaker, "3D Printing for biological applications," in Biofabrication: Biomedical Application of Rapid Prototyping, University of South Carolina, Charleston SC, March 19, 2010
196. Keynote Speaker, "The Robotic Scientist" IEEE Aerospace Conference, Big Sky MT, March 8, 2010

197. Colloquium Speaker, "A factory in your classroom", University of Virginia School of Education "Tea and Technology" seminar Series, Charlottesville VA, March 4, 2010
198. Invited Plenary Speaker, "The Robotic Scientist", Simposium Internacional de Sistemas Computacionales y Tecnologías de Información (SISCTI '10), Monterrey, Mexico, February 26, 2010
199. Invited Speaker, "The robotic Scientist", The Perimeter Institute, Waterloo ON, Canada, February 3, 2010
200. Invited Plenary Speaker, "Automated Design and Control of experiments", 16th Lab Automation Conf., Palm Springs CA, January 25, 2010
201. Invited Speaker, "The robotic Scientist", Foresight Institute, Palo Alto, CA, January 16, 2010
202. Invited keynote speaker, "A factory in your classroom", National Tech Leadership Summit, Punahou School, Honolulu HI, January 7-8, 2010
203. Colloquium Speaker, "Self-reflective Systems", Harvard Graduate School of Architecture, Cambridge MA, November 12, 2009
204. Invited Speaker, "Robot Evolution", Quantum to Cosmos Festival, The Perimeter Institute, Waterloo ON, Canada, October 22, 2009
205. Invited Keynote Speaker, "Reverse Engineering Dynamical Systems", Fourteenth Portuguese Conference on Artificial Intelligence, EPIA 2009, Aveiro, Portugal, October 12, 2009
206. Invited Keynote Speaker, "From Analog to Digital 3D printing", Fourth International Conference on Advanced research in Virtual and Rapid Prototyping, VRAP 2009, Leiria, Portugal, October 10, 2009
207. Invited Colloquium, "Self-reflective and self-fabricating robotic systems", Robotics Institute, Tufts University, Boston MA, September 24, 2009
208. Invited Keynote Speaker, "Self-reflective Systems", European Conference on Artificial Life (ECAL 2009), Budapest, Hungary, September 14, 2009
209. Invited talk, "Self-reflective machines", Idea City '09, Toronto, Canada, June 18, 2009
210. Invited talk, "Bioinspired Robotics", Emerging Technologies Pavilion, International Robots, Vision & Motion Control exhibition, June 10, Chicago IL, 2009
211. Invited speaker, UPE Cool Math & Computing Seminar, "Mining Experimental Data from Dynamical invariants – From Cognitive Robotics to Computational Biology", Department of Computer Science, SUNY Binghamton, Binghamton, NY, May 8, 2009
212. Invited Seminar, "3D Printing for Tissue Engineering Applications", South Carolina bioengineering symposium, Columbia SC, April 14, 2009

213. Invited speaker, The Goldstein Lecture Series, “Self-Reflection and Self-Fabrication in robotic systems”, Technion, Israel Institute of Technology, Haifa, Israel, March 25, 2009
214. Invited Seminar, “Self-Reflection and Self-Fabrication in robotic systems”, Ben Gurion University, Be’er Sheva, Israel, March 24, 2009
215. Invited Seminar, “Robotic self-reflection and self-assembly”, Robotics Institute, Carnegie Mellon University, Pittsburg PA, February 6, 2009
216. Invited Beckman Series Speaker, “Mining experimental data for dynamical invariants, from cognitive robotics to computational biology”, Caltech, Pasadena CA, Nov 20, 2008
217. Invited Colloquium, “Mining experimental data for dynamical invariants, from cognitive robotics to computational biology” Department of Computer Science, Austin TX, Nov 7, 2008
218. Invited Colloquium, “Evolutionary Robotics” Computer Science Dept, Wells College, Aurora NY, October 31, 2008
219. Keynote presentation, “A Factory in Your Kitchen: On multi-material 3D-printing and the future of personal fabrication” International Workshop on Microfactories, Northwestern University, Evanston Illinois, October 6, 2008
220. Invited Colloquium, “Mining freeform natural laws in dynamical data” Department of Biological Statistics and Computational Biology, Cornell University, October 1, 2008
221. Invited Colloquium, “Mining freeform natural laws in dynamical data” Department of Biological Statistics and Computational Biology, Cornell University, October 1, 2008
222. Invited SHARP Seminar Speaker, “What do robots dream of? On cognitive machines and other self-modeling systems”, NYU, NY, Sep 24, 2008
223. Invited CS/BME Colloquium Speaker, “Mining experimental data for dynamical invariants – from robotics to biomechanics and computational biology”, USC, Los Angeles CA, Sep 8, 2008
224. Invited talk, Foundation of Nanoscience 2008, "Dynamically reprogrammable self-assembly at macro and micro scales", Snowbird, Utah, April 2008
225. Invited Colloquium, Santa Fe Institute, "Mining experimental data for physical laws", Santa Fe, NM, March 2008
226. Invited talk, “The future of personal fabrication”, University of Pennsylvania Wharton School of management, Philadelphia PA, January 2008
227. Invited talk, NSF Engineering Research and Innovation Annual Meeting, Top advances and Emerging Areas, “Resilient machines”, January 2008, Knoxville TN
228. Invited talk and panel, NSF Engineering Research and Innovation Annual Meeting, “Working with the Media”, January 2008, Knoxville TN

229. Invited presentation, Light in Winter 2008, “What do robots Dream of”, January 2008, Ithaca NY
230. Colloquium Speaker, Chicago University, Physics Dept, “Cognitive Robotics and other self-modeling systems”, December 2007
231. Colloquium Speaker, Delaware University Biomechanics Dept Colloquium, “Biologically inspired robotics”, November 2007
232. Invited Plenary Address, “Emergent Self Models in Machines”, Epigenetic Robotics 2007, November 2007, Rutgers NJ
233. Colloquium Speaker, Cornell University Cognitive Science Colloquium., “Biologically inspired robotics”, October 2007
234. Invited seminar, “Biologically inspired robotics”, Free University of Brussels CS Dept., Brussels, Belgium, Sep 2007
235. Invited seminar, “Emergent Self Models in Machines”, University of Malaga CS Dept., Malaga, Spain, Sep 2007
236. I Invited Speaker, “Multimaterial Freeform Fabrication”, Symposium on Digital Fabrication, MIT, Cambridge MA, May 2007
237. Invited Plenary Address, “Emergent Self Models in Machines”, Annual meeting of The Human Behavior and Evolution Society, May 2007, Williamsburg, Virginia
238. Colloquium Speaker, Carnegie Mellon University, Mechanical Engineering Dept., “Biologically inspired robotics”, February 2007
239. Invited 4-lecture series, “Evolutionary Robotics”, Spring school on cognitive science and artificial intelligence, Günne at Lake Möhne, Germany, March 2007
240. Invited plenary speaker, “Robotics Innovations”, TED / Technology & Design, Monterey, CA, March 2007
241. Invited Speaker, “Machine Minds”, International Symposium on Creating Brain-Like Intelligence, Honda Research Institute Europe, Hohenstein, Germany, February 2007
242. Invited talk, “Reverse engineering biological networks”, Computational & Theoretical Biology Symposium, Rice University, December 2006
243. Colloquium, “Biologically Inspired Robotics”, Computer Science Dept, Harvard University, November 2006
244. Invited speaker, “Biologically Inspired Robotics”, Evolving Life Life Evolving, Namur, Belgium, December 2006
245. Colloquium Speaker, “Biologically Inspired Robotics”, Mechanical & Aerospace Engineering Dept, Vanderbilt University, October 2006

246. Invited Colloquium Speaker, “Emergent Self-models in Machine Minds”, Sage Center, University of California at Santa Barbara, October 2006
247. Invited Keynote Speaker, “Evolutionary Robotics”, Dana-Farber Cancer Institute Annual retreat, Boston, October 2006.
248. Invited Speaker, “Multimaterial Freeform Fabrication”, Symposium on Digital Fabrication, Pretoria, South Africa, June 2006
249. Invited Speaker, “Evolutionary Robotics and Evolutionary Design “, 50th Anniversary Summit of Artificial Intelligence, Monte Verita, Switzerland, July 2006
250. Invited Keynote Speaker, “Biologically Inspired Robotics”, Robocup 2006, Bremen, Germany, June 2006
251. Invited Keynote Speaker, “Co-evolutionary Learning in Embodied Cognitive Agents”, Artificial Life X, Bloomington, Indiana, USA June 2006
252. Invited Keynote Speaker, “Co-evolutionary embedded systems”, The 9th International Conference on Intelligent Autonomous Systems (IAS-9), Tokyo Japan, March 2006
253. Invited Speaker and Panelist, “Automating Discovery”, W.M.Keck Institute Roundtable on future directions in science, Los Angeles CA, May 2006
254. Colloquium Speaker, “Biologically Inspired Robotics: From evolving to Self-Replicating Machines”, College of Engineering, University of Vermont, April 2006
255. Colloquium Speaker, “Automating Discovery”, Department of Pharmacology, University of Texas, Feb 2006
256. Special Seminar Speaker, “Biologically Inspired Robotics: From evolving to Self-Replicating Machines”, Mechanical Engineering Department, Indian Institute of Technology (IIT) Kanpur, January 2006
257. Invited Presenter and Panelist, “Science & Technology Revolutions”, Renaissance Weekend, Charleston SC, Dec 2005
258. Invited Plenary Keynote Speaker, “Print Anything: The future of rapid prototyping”, Annual retreat, Lexmark Inc., Lexington, KY, Nov 2005
259. Invited Colloquium, “Co-evolutionary Methods in System Design and Analysis”, Exxon-Mobile Upstream Research Company, Huston TX, Nov 2005
260. Invited Colloquium, “Evolving Engineering Systems”, Rockefeller University, New York NY, Nov 2005
261. Invited Speaker, “3D Printing Functional Systems”, Symposium on Digital Fabrication, Tromso, Norway, August, 2005

262. Invited Plenary Speaker, “Evolving Engineering Systems”, Int. Conference of Systems Biology, Boston MA, October 2005
263. Invited Plenary Speaker, “Biologically Inspired Robotics”, Robotics festival and exhibition, Venice, Italy, July 2005
264. Invited Speaker, DARPA/ISAT workshop "Beyond Video", Institute for Defense Analyses, Alexandria VA, June 2005
265. Invited speaker, Microsoft Faculty Summit, “3D Tablet Application”, Redmond WA, June 2005
266. Invited Speaker, “Coevolutionary methods in Locomotion”, Locomotion Workshop, Robotics Science and Systems, MIT, June 2005
267. Invited Speaker, “Stochastically reconfiguring systems”, Modular robotics Workshop, Robotics Science and Systems, MIT, June 2005
268. Invited Colloquium Speaker, “Biology and Machines”, Physics Dept, Technion – Israel Institute of Technology, December, 2004
269. Invited Lecturer, “Computational Evolution” (Three lectures series), Winter school in theoretical physics, Hebrew University of Jerusalem, December, 2004
270. Invited colloquium speaker, “Evolved Engineering Systems”, Dept. of Ecology and Evolutionary Biology, Michigan State University, October, 2004
271. Invited Seminar, “Co-evolution for model inference”, Seminar Series in Bioinformatics, Weisman Inst of Science, October, 2004
272. Invited Speaker, DARPA-sponsored workshop on Parallel Assembly, Lansdowne, VA, June 2004
273. Invited speaker, “Innovation in evolutionary processes”, In Search of Innovation – A Complex Adaptive Systems Perspective, Santa Fe, NM, June, 2004
274. Invited Colloquium Speaker, “Modularity, Regularity and Hierarchy in Evolved Systems”, Dept. of Ecology and Evolutionary Biology, Cornell University, March 29, 2004
275. Invited speaker, Founders workshop, “Innovation in evolutionary processes”, Santa Fe Institute for Complex Systems, Santa Fe, NM, USA, Jan 15 2004
276. Invited plenary speaker, Meeting of the National Academies, “Modularity, Regularity and Hierarchy in Evolved Engineering Systems”, Irvine, CA, USA, Nov 15 2003
277. Invited speaker, Microsoft Faculty Summit, “3D Ink”, Redmond WA, June 28, 2003
278. Invited speaker, “Design Automation for Complex Systems”, Advanced Systems Office of the NASA Office of Space Flight, NASA JPL, Jan 14, 2003

279. Invited speaker, Mechanical Engineering Colloquium series, California Institute of Technology, May 7, 2002
280. Invited plenary speaker, NASA Workshop on Revolutionary Aerospace Systems Concepts For Human/Robotic Exploration Of The Solar System, Hampton VA, November 2001
281. Invited speaker, Workshop on Nanophysics and Bio-Electronics, Dresden, Aug 20-24, 2001
282. Invited speaker, "Evolutionary Design", Boston University, May 2001
283. Invited speaker, "Evolutionary Design", Cornell University, May 2001
284. Invited speaker, "Evolutionary Design", University of Illinois at Urbana Champaign, Apr 2001
285. Invited speaker, "Evolutionary Design", University of Washington, Apr 2001
286. Invited speaker, "Evolutionary Design", Stanford University, Apr 2001
287. Invited speaker, "Evolutionary Design", UC Berkeley, Berkeley, CA, March 2001
288. Invited speaker, "Evolutionary Design", MIT, Cambridge, MA, Feb 2001
289. Invited speaker, "Evolutionary Design", Harvard University, Cambridge, MA, Feb 2001
290. Invited speaker, "Evolutionary Design", Rice University, Austin, TX, Jan 2001
291. Invited speaker, "Evolutionary Design", Tufts University, Medford, MA, Jan 2001
292. Invited speaker, "Evolutionary Design", Northwestern University, Chicago IL, Jan 2001
293. Invited Colloquium, "Evolutionary Design", Dartmouth College - Hanover, NH, Jan 2001
294. Invited plenary speaker, ("New and Notable") Annual Biophysical Society meeting, February 20, 2001, Boston, MA, USA
295. Invited Talk, "Evolutionary Robotics", IEEE Robotics and Automation, Boston Chapter, 2001
296. Invited Speaker, International Firefighting robot competition, Trinity College, Hartford, CT, 2001
297. Plenary speaker, Volen Center for Complex Systems Annual Retreat, February 21, 2001, Woods Hole, MA, USA
298. Colloquium Speaker, "Automated Design and Fabrication of Robotic Lifeforms", Mechanical Engineering Department, Technion, Israel, Jan 2001
299. Invited talk, EXPO'2000 Shaping the future, Hannover, Germany, Aug 1-3, 2000
300. Plenary talk, "Automated Design Concepts, Methods, and Algorithms", CIRP Design Seminar, Haifa Israel, May 16, 2000
301. Invited talk, "High order Neurons", Workshop on Hybrid Neural Systems, NIPS 98, Breckenridge, CO, December 4-5, 1998



## **Professional Activities**

### **Membership**

ASME (American Association of Mechanical Engineering), Member, since 2000

IEEE (Institute of Electrical and Electronic Engineers), Member, since 1998

AAAI (American Association of Artificial Intelligence), Member, Since 2002

ACM (Association of Computing Machinery), Member, since 2005

### **Conference Organization**

1. **General Chair**, Inside 3D printing Conference and Expo, New York NY, April 11-12, 2016 (5000 participants)
2. **General Chair**, Inside 3D printing Conference and Expo, Santa Clara, Oct 20-21, 2015 (1000 participants)
3. **General Chair**, Inside 3D printing Conference and Expo, New York NY, April 15-17, 2015 (4000 participants)
4. **General Chair**, Inside 3D printing Conference and Expo, Santa Clara CA, Oct 21-23, 2014 (Approx. 1900 participants)
5. **General Chair**, Artificial Life 2014, NYC, July 2014 (Approx. 250 participants)
6. **General Chair**, Inside 3D printing Conference and Expo, NYC, April 22-23, 2014 (Approx. 5000 participants)
7. **General Chair**, Inside 3D printing Conference and Expo, San Jose CA, Sep 17-18, 2013 (Approx. 1500 participants)
8. **General Chair**, Inside 3D printing Conference and Expo, Chicago, July 10-11, 2013 (Approx. 1000 participants)
9. **General Chair**, Inside 3D printing Conference and Expo, NYC, April 22-23, 2013 (Approx. 3000 participants)
10. **Co-organizer**, Workshop on Soft Robotics, Monte Veritas, Switzerland, July 2013 (Approx. 80 participants)
11. **Co-organizer**, Workshop on Modular Robotics, IROS, August 2008
12. **General Chair**, ACM Genetic and Evolutionary Computation Conference (GECCO) 2007, (Expected ~600 participants) Largest annual conference on evolutionary computation.

13. **Co-organizer**, Workshop on Self Replication, Indiana University, June 2006
14. **Co-organizer**, Workshop on Modular Robotics, U. of Pennsylvania, June 2006
15. **Area Chair**, Robotics Science and Systems '06, U. of Pennsylvania, June 2006 (expected ~300 participants)
16. **Track Chair**, Genetic and Evolutionary Computation Conference, Seattle WA, June 2006 (expected 600 participants)
17. **Track Chair**, Genetic and Evolutionary Computation Conference, Washington DC, June 2005 (600 participants)
18. **Co-Chair**, Workshop on Modularity, Regularity and Hierarchy in Evolutionary Computation, June 2004, Seattle, WA (55 Participants).
19. **Co-Chair**, AAAI Symposium on Computational Synthesis, March 24-26, 2003, Stanford CA (60 Participants).
20. **Co-organizer**, ALife VII Workshop on Co-evolution of Bodies and Brains, Aug 3, 2000 Reed College, Portland Oregon

#### **Reviewer, Program and Editorial Committees**

1. **Editor-in-Chief (2013-2015)**: 3D Printing and Additive Manufacturing (3DP), Mary Ann Liebert Publishing
2. **Program Committees**: Artificial Intelligence in Design (AID), Artificial Life (ALIFE), Genetic and Evolutionary Computation (GECCO), Solid Modeling (SM), Frontiers in Evolutionary Algorithms (FEA)
3. **Reviewer**: Nature, Science, PNAS, Computer Aided Design, ASME Journal of Computing and Information Science (AJCIS), ASME Journal of Mechanical Design (AJMD), IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI), IEEE Transaction on Evolutionary Computation, Artificial Life, Journal of Computer Integrated Manufacturing, International Journal of Computer Vision (IJCV), Computer Vision and Image Understanding (CVIU), Computer Graphics, Others...

#### **Grants and awards**

(First name listed is PI, following (if any) are Co-PIs)

1. Chattopadhyay, I, Lipson H., "ZeD: Zero information modeling", DARPA, 3/2017-2/2021, \$1.6M
2. Lipson H., "Simultaneous Optimization And Simulation", DARPA, 1/2017-12/2020, \$989K
3. Lipson H., Grinspun E (2016) "Food Printing", SEAS SIRS, 2017-2018, \$160,000

4. Lipson H., "Voxel Advanced Digital-manufacturing for Earth and Regolith in Space ", NASA, 4/2016-7/2016, \$18K
5. Lipson H. (2016) "Self-Aware machines", Northrop Grumman Corporation 2016-2017, \$85,000
6. Lipson H. (2016) "Soft Actuators for Soft Robotics", IMOD, 2016-2017, \$200,000
7. Lipson H., Gore M., Nelson R. (2015) " Deep Learning UASs for High-Throughput Agricultural Disease Phenotyping", National Science Foundation, 5/2015-4/2018, \$1.2M
8. Lipson H., (2015) "Text To Food: Exploration In 3D Food Printing", University of Chicago, 5/2014-4/2015, \$10,000
9. Lipson H., Labutov I. (2014) "Automatic curriculum generation from prerequisite concept networks", Metaknowledge Network, 2014-2015, \$108,882
10. Lipson H. (2013) "Simulator 3D printing electrometrical systems", IMOD, 2015-2016, \$125,000
11. Lipson H. (2014) "Matter Compilers", DARPA Open Manufacturing, 2014-2015, \$100,000
12. James K. Min, Lipson H., R Shepherd (2014) " Fabrication of 3D Printing Models of Patient-Specific Geometric Models of Human Coronary Arteries for Non-invasive Calculation of Coronary Artery Pressure and Flow", Cornell Medical School, 2014-2015, \$47,491
13. Lipson H. (2013) "3D printing electrometrical systems", IMOD, 2013-2014, \$150,000
14. Lipson H. (2012) "Inverse Gillespie Algorithm", ARO, 2012-2014, \$300,000
15. Lipson H. (2012) "Matter Compilers", DARPA Open Manufacturing, 2012-2014, \$400,000
16. Lipson H. (2011) "Rapid Assemblers", DARPA M3 2011-2014, \$430,000
17. Bull G., French J., Berry R., Lipson H. (2010) "The FabLab classroom: Preparing Students for the Next Industrial Revolution", NSF 2010-2013, \$250,000
18. Bull G., Berry R., Lipson H. (2010) "Fab@School – A Digital Fabrication Laboratory for the Classroom", Motorola Foundation Innovation Generation, \$250,000, 2010-2011
19. Bull G., Berry R., Lipson H. (2010) "Fab@School – A Digital Fabrication Laboratory for the Classroom", MacArthur Reimagining Learning Competition, \$185,000, 2010-2011
20. McLean J., Wkiso J., Lipson H., (2009) "Elucidation of Leukocyte and Macrophage Biomarker Signature from Drugs of Abuse", NIH, \$2,700,000, 2009-2011
21. Lipson H., Suel G., (2009) "Distilling natural laws from experimental data", NSF, \$600,000, 2009-2012
22. Wkiso J., Lipson H., Jenkins J.W., (2009) "Automated Characterization of the Interaction Dynamics between Toxic Chemicals and Biological Agents", DTRA, \$2,499,762, 2009-2013

23. Moon F.C, Lipson H., Sachse W., Williams C.H. Garcia E.G, Pratt K. (2008), “Vibro-Wind Technology: Alternative Wind Energy Systems for Buildings”, Cornell CCSF, \$100,000, 2008-2009.
24. Lipson H., Erickson D., Jaeger H., (2008), “Hierarchical programmable self-assembly”, DARPA MTO, \$2,500,000, 2008-2011.
25. Hornby G., Lipson H., Pollack J.B., (2008), “Co-evolution of designers and critics”, NSF Creative IT, \$800,000, 2008-2011.
26. Rus D., Lipson H., Yim M., Klavins E., (2007), “The reconfigurable Factory”, NSF EFRI, \$2,000,000, 2007-2011.
27. Bonassar L., Butcher J, Lipson H (2007) “Multidisciplinary Approach for Engineered Heart Valves Using Novel Biomaterials,” Morgan Tissue Engineering, \$96,000 2007-2008
28. Bonassar L, Garcia E, Lipson H (2007) “Engineering Biological Interfaces Towards Enhanced Prosthetic Integration,” AFOSR, \$205,469, 2006-2008
29. Lipson H. (2007) “A Modular Reconfigurable Robotic Platform for Research in Machine Resiliency and Adaptation”, Microsoft Gift, \$105,000 2007-2008
30. Lipson H. (2007) “A Modular Reconfigurable Platform for Robotics Education”, Festo AG & Co. KG, \$89,000 2007-2008
31. Lipson H. (2007) “A 1-MegaVoxel 3D Digital Printer for Multi-material Desktop Microfabrication”, DARPA MTO Young Faculty Award, \$150,000 2007-2008
32. Bongard J., Lipson H. (2006) “Automatic Probing and Modeling of Nonlinear Biological Networks: Toward Automated Systems Biology”, Microsoft Corp., \$178,000 2006-2007
33. Lipson H., Erickson D. (2006) “SGER: Hierarchical Microfabrication: Actively Programmable Multi-level Fluidic Self-Assembly”, NSF, \$130,000 2006-2007
34. Campbell M., Garcia E., Lipson H., Psiaki M., Huttonlocker D., Selman B. (2007) “Team Cornell: Autonomous Vehicle for Operations in Urban Environments”, DARPA, 2006-2007, \$1,000,000
35. Lipson H. (2006) “CAREER: Algorithms For Design Of Active Fault-Tolerant Systems”, NSF, \$400,000 2006-2011
36. Lipson H. (2005) “ITR: Sketching for Conceptual Visualization, Simulation, and Learning”, NSF, \$365,000 2005-2007
37. Valero Cuevas F.C., Lipson H. (2004) “Structure & function of the fingers' tendinous apparatus”, NIH, \$1,100,000 2004-2008
38. Lipson H., Hornby G. (2004) “Evolutionary algorithms for recovery of physical robot functionality in unanticipated conditions”, NASA, \$474,394 2004-2006

39. Lipson H., (2004) “In-Situ Self-Repair and Adaptation for Autonomous Vehicles”, NASA GSRP 2-Year Graduate Research Fellowship, 2004-2005
40. Saylor J. M., Lipson H., Moon F. (2004) “A Digital Library of Printable Machines”, The Institute for Museum and Library Services (IMLS), \$499,710, 2004-2006
41. Lipson H., Alon U., (2004) “Computational Methods for Automatic Inference of Biological Networks”, The National Academies, \$75,000, 2004-2005
42. Lipson H., (2003) “Embedded Systems for Evolutionary Robotics”, Microsoft unrestricted gift, \$25,000, 2003-2004
43. Lipson H, Valero Cuevas F, Garcia E. (2003-2007) "Biologically Inspired Hexapod Platform With Decentralized Neurocontrol And Adaptive Morphology", \$200,000, U.S. Department of Defense
44. Lipson H., (2002) “3D Digital Sketching”, Microsoft unrestricted gift, \$116,000, 2002-2004
45. Saylor J.M., David Henderson, Hod Lipson, Francis Moon, (2002) “Kinematic Models for Design Digital Library”, National Science Foundation, \$725,000 2002-2004.
46. Lipson H, (2002) “Autonomous Self-Extending Machines for Accelerating Space Exploration”, NASA Institute for Advanced Concept (NIAC), \$75,000, 2002-2003.
47. Lipson H., (2002) “Electronic Workflow in Engineering Synthesis Courses”, Cornell CIT, \$20,000 2002-2003
48. Pollack J.B., Lipson H. (2001) “Complexity in automatically designed robotics”, DOE – U.S. Department of Energy, \$526,000 2002-2004
49. Pollack J.B., Lipson H., (1999) “Fully automated design and construction of throwaway robots”, DARPA – U.S. Defense Advanced Research Projects Administration, \$952,000 1999-2002.

#### **Outreach talks and activities (selected)**

1. Cornell Engineering Alumni Association (CEAA), NYC, Dec 2, 2013.
2. Fox 5 WTTG (Washington, DC) , “3D Printing”, May 14, 2013.
3. Cornell Engineering Alumni Association (CEAA), Washington, DC, May 13, 2013.
4. YNN (NYS State-wide Cable News Channel), “3D printing”, May 9, 2013.
5. CBS This Morning Show, “3D printing”, March 2, 2013
6. Glenn Beck Show, “3D printing”, January 17, 2013
7. Presentation to the Upstate NY Innovation group on the future of 3D printing, Syracuse, Nov 8, 2012
8. NPR Science Friday, “3D printing”, June 22, 2012

9. Presentation to the Puerto Rico Alliance For Minority Participation, "Biologically Inspired Robotics", Nov 2009
10. Presentation to high School summer program, "Biologically Inspired Robotics", July 20, 2009
11. CCMR outreach presentation, "A factory in your kitchen", May 29, 2009
12. Ithaca High School Talk on Robotics, May 14, 2009
13. Lecture for Contemporary Physics for Teachers program, Center for Nanoscale Systems, Cornell University, July 2008
14. Lecture for the High School students enrolled in Exploration in Engineering, Cornell University, July 14, 2008
15. Presentation on adaptive robotics at the Ithaca Science Center, Feb 2007, Syracuse, NY
16. Presentation on adaptive robotics to high school students, Nottingham High, Feb 2007, Syracuse, NY
17. Talk at Manufacturers Association of Central New York (Syracuse), "Custom Fabrication", January 2006
18. CCMR Fun talk for summer REUs, "How to send physical objects over the Internet", July 2005
19. Talk at NY Center for Economic Growth (Albany), "3D Printing", March 2005
20. "Entertaining Science", NY City, Aug 2003, Cornelia Café, Nov 2003
21. Talk and demonstrations for high-school girls at the CURIE Academy, Minority & Women's Programs in Engineering, July 15, 2002
22. Talk and demonstrations for high-school children at the Jisan Research Institute, Pasadena, CA, May 7, 2002
23. Competition Judge, Lego robot competition for primary and middle school children, Boston Science Museum, MA, 2001
24. Robot exhibition (and permanent collection), London Science Museum, UK.
25. Robot exhibition, Boston Science Museum, MA
26. Interactive evolve-at-home web project, over 120,000 unique visitors, 30,000 active participants worldwide.
27. Covered by various children/popular books on robotics (e.g. "Robots among us")

#### **Outreach via Press and media coverage (selected)**

28. Popular Science (print): "175,000 Ways to Walk" September 2013. (Soft Robotics)
29. Through the Wormhole (Science/Discovery Channel): "Are Robots the Future of Human Evolution?" Season 4, Episode 5, July 10, 2013.

30. Aeon Magazine (online): Robot evolution by Emily Monosson (June 2013)
31. The Why? Files (online) - 3-D printing: wave of the future by David Tenenbaum (June 2013)
32. Fox 5 WTTG (Washington, DC) - "3D Printing", May 14, 2013.
33. Cornell Engineering Alumni Association (CEAA), Washington, DC, May 13, 2013.
34. YNN (NYS State-wide Cable News Channel), "3D printing", May 9, 2013.
35. CBS This Morning Show, "3D printing", March 2, 2013
36. Glenn Beck Show, "3D printing", January 17, 2013
37. Alternative Energy online: Energy Harvesting 'Piezo-tree' Concept
38. Wired Magazine: Download Your Own Robot Scientist by Brandon Keim
39. Singularity Hub: Eureqa - Software to Replace Scientists by Aaron Saenz
40. Physorg: Eureqa, the robot scientist (w/ Video) by Lin Edwards
41. Technovelgy: Eureqa Artificially Intelligent Computer Scientist by Bill Christensen
42. NeoTeo (Spanish): Eureqa: Software que deduce leyes científicas by Ariel Palazzesi
43. Discover News (China): Eureqa程序：可替代大脑演算的机器人程序
44. Heise Online (Germany): Wissenschafts-KI zum Download
45. Hack A Day: Eureqa Discovers Equations by Gerrit Coetzee
46. Seed Magazine: Our Adapting Future by Miles Kemp [pdf]
47. An Optimist's Tour of the Future: How can you find the truth? by Mark Stevenson [pdf]
48. RapidToday: STL 2.0 May Replace Old, Limited File Format, October 30, 2009 [pdf]
49. Q2C Festival Waterloo, Canada, October 22: The Agenda with Steve Paikin: Robotics Revolution and the Future of Evolution
50. Q2C Festival, Waterloo, Canada, October 21: Science in the Pub: So We're All Gonna Be Robots Now?
51. •Radio TICAL: Making Machines that Can Learn, Podcast Interview with Hod Lipson by Michael Simkins
52. TEDBlog: World Science Festival 2009 report: Battlestar Galactica: Cyborgs on the Horizon by Matthew Trost
53. EyeOnTechnology: Cornell Professor Creates Auto-Learning Entities by CG Masi [pdf]
54. Galactica Sitrep: Evolutionary Robotics and Battlestar Galactica: an Interview with Hod Lipson by Sam J. Miller
55. Forbes/Wolfe Emerging Tech Report: The Awakening of the Artificial Mind, May 2009 Wired Magazine: Computer Program Discovers Laws of Physics by Brandon Keim
56. New York Times: Hal, Call Your Office: Computers That Act Like Physicists by Kenneth Chang

57. The Cornell Chronicle: Move over, Newton: Scientifically ignorant computer derives natural laws from raw data by Bill Steele
58. Nature News: Physics by numbers by Philip Ball
59. ScienceDaily: Being Isaac Newton: Computer Derives Natural Laws From Raw Data by Bill Steele
60. Physics World: Algorithm discovers physical laws by Edwin Cartlidge
61. NSF: Maybe Robots Dream of Electric Sheep, But Can They Do Science? by Joshua Chamot
62. NSF: Teleconference with Cornell University professor Hod Lipson, doctoral student Michael Schmidt and reporters
63. The Telegraph: Robot discovers laws of Newton in hours by G.S. Mudur
64. Reuters: Robot scientists can think for themselves by Ben Hirschler
65. PhysOrg: Researchers Wanted: Humans Need Not Apply? by PhysOrg.com
66. ScienceNOW: Robotic Scientists Make First Discoveries by Constance Holden
67. USA Today: Robots act as scientists without assistants by Dan Vergano
68. Digg Frontpage: Being Isaac Newton: Computer derives natural laws from data submitted by Iekahe
69. Dail News & Analysis: In a first, machines crack science puzzles by Sci/Tech
70. Dziennik (Poland): Roboty potrafią myśleć jak uczeni by Magdalena Salik
- 71.
72. GearLog: Scientists Develop Thinking Robot posted by Jamie Lendino
73. The Independent: Robot scientists 'can think for themselves' by Reuters
74. Red Orbit: Robot Scientists Mark Advancement For Artificial Intelligence by redOrbit staff
75. Nature Blog: Rise of the machines - April 03, 2009 by Daniel Cressey
76. ITextreme (Hungary): Az első robot kutató, mely új tudományos felfedezést tett by MaxRay
77. aeiou (Portugal): "Adão" é um robô e faz experiências científicas by Life
78. Publico (Portugal): Investigadores dizem ter criado máquinas capazes de formular teorias científicas by Reuters
79. Le Scienze (Italy): Adam e Co.: i primi robot che fanno ricerca by Eng & Tech
80. Novosti (Russia): Robots investigadores realizan primeros descubrimientos by Latest News
81. Techno-Science (France): Des robots peuvent-ils raisonner comme des scientifiques? by News
82. Abril (Brazil): Robôs cientistas conseguem pensar sozinhos by Ben Hirschler
83. MyTech (Italy): Scienza, creati robot scienziati che ragionano da soli by Ben Hirschler
84. 生物通 (Hong Kong): 本期《自然》《科学》精选 by Biology pass



85. El Mundo (Spain): Adán y Eva, los nuevos científicos robóticos by Rosa Tristan
86. The Gazette: Watch out scientists, a robot may replace you by Ben Hirschler
87. RTVE (Spain): El próximo Newton podría ser un robot by News
88. RIAN (Russia): Ученые роботы совершили первые открытия by Science & Tech
89. Estadao (Brazil): Cientistas criam robôs que fazem descobertas científicas by Reuters
90. Que.es (Spain): Adán y Eva, los primeros 'robots' científicos by Tech news
91. Diario (Portugal): Criado robô que faz descobertas científicas by Tech
92. Softpedia: Algorithm Draws Scientific Laws from Experiment Data by Tudor Vieru
93. Spiegel (Germany): Computer entdeckt selbständig Naturgesetze by People & Tech
94. Heise (Germany): Adam entdeckt Naturgesetze. Adam ist ein Programm. by News
95. HardOCP: Computer Program Deduces Laws of Physics by Terry
96. Programmazione (Italy): Leggi di natura scoperte con il computer by Paolo Raviola
97. Krone (Austria): Software erkennt Naturgesetze by Hardware & Software
98. Inovacao Tecnologica (Brazil): Robô Cientista 2: novo robô poderá descobrir leis fundamentais da física by Robotica
99. Examiner: Program self-discovers laws of physics without knowledge of them by Harold Nolte
100. The Guardian: 'Eureka machine' puts scientists in the shade by working out laws of nature by Ian Sample
101. Cornell Daily Sun: What's Next? Super Computers and teh Future of Journalism by Cody Gault
102. The Inquirer: Meet the scientists behind the robo-scientists by Wendy Grossman
103. Correio de Manha (Portugal): Robôs realizam experiências by Technology News
104. Interia (Poland): Komputer zamiast naukowca by Mariusz Blonski
105. Watertown Daily Times: Robots in science by News
106. Wirtualna Polska (Poland): Maszyna odkrywa prawa natury by Heise Online
107. Tendencias Informáticas (Spain): Desarrollan una aplicación informática capaz de explicar leyes físicas naturales by Pablo Javier Piacente
108. Punto Informatico (Italy): HAL 9000 ha il camice bianco by Alfonso Maruccia
109. TVNZ (New Zeland): Smart robots may replace scientists by Reuters
110. Heise Online (Germany): Software entdeckt Naturgesetze by News
111. NyTeknik (Sweden): Vetenskapsmän får konkurrens av robotar by Anders Wallerius
112. Die Presse (Germany): Prof. Dr. Roboter analysiert vollautomatisch by Jurgen Langenbach
113. Science Podcast, AAAS: Science Podcast: Automating Science [mp3]
114. The Skeptics' Guide to the Universe: Computers That Do Science [mp3]

115. Next Big Future: AI and Robotic Breakthroughs that Multiply Scientific Research Productivity by BW
  116. Dallas News: Computers to replace drivers, cashiers and... physicists? by Andrew Smith
  117. Sci-Tech Today: Scientists Develop Robots To Be Scientists by Dan Vergano
  118. 科学时报 (China): 美科学家设计出能自行推算物理定律的程序 by Wei Ke
  119. Neues Deutschland (Germany): Physik aus der Maschine by Von Martin Koch
  120. WiredVision (Japan): 「物理法則を自力で発見」した人工知能 by Brandon Keim
  121. Barra Punto (Spain): Un algoritmo capaz de descubrir leyes científicas by JoSek
  122. Discovery Channel, Fab@Home, Jan 2007
  123. Discovery Channel, Resilient robotics, Nov 2006
  124. NBC TV interview (live) on machine self-replication, May 2005
  125. National Public Radio “Science Friday” (live) on biologically inspired robotics. May 2005
  126. National Public Radio morning edition, on self-replication, May 2005
  127. BBC World Service, Interview on biologically inspired robotics, May 2005
  128. O Globo (largest South American TV Network), Self-replicating Machines, May 2005
  129. Interview in Local Ithaca Radio station on AI, Dec 2002
  130. Interviews on National Public Radio (NPR) – “All things Considered”
  131. Interviews on WBUR (Boston public radio) on evolutionary robotics
  132. Evening new story on National TV ABC News, Aug 2000
  133. Evening new story on National TV CBS News, Aug 2000
  134. News story on BBC World News, Aug 2000
  135. Featured on special documentary *Scientific American Frontiers*, Sep 2000;
  136. Featured on Discovery Channel: Robotics.
- 13BSelected press
137. Popular Mechanics Magazine “Breakthrough Award: Fab at Home, Open-Source 3D Printer, Lets Users Make Anything”, Nov 2007
  138. Popular Science Magazine, June 2007
  139. Newsweek, Nov 2006 “Do It yourself, Robot”
  140. Mechanical Engineering Magazine “The robot that knew Just Enough”, Jan 2007
  141. Technology Review, “Resilient Robots”, Jan 2007
  142. Die Zeit, “Robotic Fabrication”, Jan 2007
  143. New Scientist, [Fab@Home](#)H, Jan 2007
  144. Daily Telegraph, London, UK “Forward Vision”, Jan 2007

145. Newsweek Russian Edition, Chinese Edition, “Resilient Robotics”, 2007
146. Scientific American, Newsweek, USA Today, “Resilient Robotics”, November 2006
147. Engineering News (cover story) “Fabulous Fabrication”, July 2006
148. Der Spiegel “Der Mutter aller Maschinen”, July 2005
149. NY Times Science Section (front page), Self-replicating Machines. May 2005
150. TIME Magazine, Sep 2000
151. NY Times (Front page), Aug 2000, “Automatic design and manufacture of robots”
152. Scientific American, Aug 2000, “A new species?”
153. New Scientist, Aug 2000 “Shape Shifters”
154. Wall Street Journal, Op-Ed, Sep 2000 “All bets are off”
155. Washington Post, LA Times, US News, Boston Globe, Der Spiegel, Le Monde, El Mundo