**Hod Lipson, Ph. D.**
*James and Sally Scapa Prof. of Innovation*
**Professor of Engineering and Data Science**
**Chair, Department of Mechanical Engineering, Columbia University, NYC**
*Machine Learning, Data Science, Robotics*

# Curriculum Vitae

*(Updated July 2024)*

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| **Current Address:** | Columbia University, Mudd 220<br>500 W. 120th St., New York, NY 10027 USA<br>+1 (607) 592-4383 |
| **E-Mail** | hod.lipson@columbia.edu |
| **Web** | https://www.hodlipson.com/ |
| **Scholar** | https://scholar.google.com/citations?user=F_Go4V4AAAAJ |

## Key academic metrics

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| Citations | 48,632 |
| H-Factor | 89 |
| Publications: | 373 |
| Invited Talks | 505 |
| PhD Students | 38 |
| Years since PhD | 25 |
| Google Rank in Robotics | #47 |

## Academic Positions

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|---|---|
| July 2015-present | Full Professor (endowed), Mechanical Engineering Department and Data Science Institute, Columbia University, NY<br>Co-Director, Columbia Makerspace |
| 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. |

## Education

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|---|---|
| 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 1999 |
| Sep 85-Jul 89 | Technion Israel Institute of Technology – B.Sc. Mechanical Engineering, Cum Laude. Awarded 1989 |

## Startup Companies Founded

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

## Editorial Positions

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|---|---|
| 2020-presnt | Editorial Board, ***Science Robotics*** *(Impact factor 23.5)* |
| 2018-presnt | Editorial Board, ***Soft Robotics*** *(Impact factor 8.07)* |
| 2013-2015 | Founding Editor-in-Chief, ***3D Printing and Additive Manufacturing*** *(3DP)*, Mary Ann Liebert Publishing (*Impact factor 3.5*) |

## Professional Positions

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|---|---|---|
| 1989-1994 | Israel Defense Force | Lt. Cmdr. (Navy) – Full time 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

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|---|---|---|
| Spring 2024 | Columbia | **Digital Manufacturing** (MECE 4606, enrollment 81) |
| Spring 2024 | Columbia | **Robotics Studio** (MECE 4611, enrollment 82) |
| Fall 2023 | Columbia | **Evolutionary Computation** (MECS 4510, enrollment 61) |
| Fall 2023 | Columbia | **Robotics Studio** (MECE 4611, enrollment 80) |
| Spring 2023 | Columbia | **Digital Manufacturing** (MECE 4606, enrollment 107) |
| Spring 2023 | Columbia | **Robotics Studio** (MECE 4611, enrollment 75) |
| Fall 2022 | Columbia | **Evolutionary Computation** (MECS 4510, enrollment 61) |
| Fall 2022 | Columbia | **Robotics Studio** (MECE 4611, enrollment 84) |
| Spring 2022 | Columbia | **Digital Manufacturing** (MECE 4606, enrollment 122) |
| Spring 2022 | Columbia | **Robotics Studio** (MECE 4611, enrollment 78) |
| Fall 2021 | Columbia | **Evolutionary Computation** (MECS 4510, enrollment 110) |
| Fall 2021 | Columbia | **Robotics Studio** (MECE 4611, enrollment 75) |
| Spring 2021 | Columbia | **Digital Manufacturing** (MECE 4606, enrollment 110) |

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| Spring 2021 | Columbia | **Robotics Studio** (MECE 4611, enrollment 40) |
| Fall 2020 | Columbia | **Evolutionary Computation** (MECS 4510, enrollment 60) |
| Fall 2020 | Columbia | **Robotics Studio** (MECE 4611, enrollment 40) |
| Spring 2020 | Columbia | **Digital Manufacturing** (MECE 4606, enrollment 60) |
| Spring 2020 | Columbia | **Robotics Studio** (MECE 4611, enrollment 35) |
| Fall 2019 | Columbia | **Evolutionary Computation** (MECS 4510, enrollment 60) |
| Spring 2019 | Columbia | **Digital Manufacturing** (MECE 4606, enrollment 55) |
| Spring 2019 | Columbia | **Robotics Studio** (MECE 4611, enrollment 26) |
| Fall 2018 | Columbia | **Evolutionary Computation** (MECS 4510, enrollment 24) |
| Fall 2018 | Columbia | **Special Topics - Robotics** (MECE 8990 enrollment 12) |
| Spring 2018 | Columbia | **Digital Manufacturing** (MECE 4606, enrollment 55) |
| Fall 2017 | Columbia | **Evolutionary Computation** (MECS 4510, enrollment 24) |
| Spring 2017 | Columbia | **Digital Manufacturing** (MECE 4606, enrollment 51) |
| Spring 2017 | Columbia | **Kinematics of Machines** (MECE 3401, enrollment 9) |
| Fall 2016 | Columbia | **Machine Design** (MECE 3409, enrollment 70) |
| Spring 2016 | Columbia | **Digital Manufacturing** (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 | **Evolutionary Computation (CS5724)**, Graduate course covering evolutionary computation and applications, enrolment ~20 |
| Summer 2014 | CAU | **3D Printing** (approx. 50 participants) |
| Spring 2013,14 | Cornell | **Mechanical Engineering Synthesis (MAE2250)** on product design process, Required Introductory Sophomore course enrolment ~180 |
| Fall 2012,13 | Cornell | **Evolutionary Computation (CS5724)**, Graduate course covering evolutionary computation and applications, enrolment ~20 |
| Fall 2009-11 | Cornell | **Foundations of Artificial Intelligence (CS4700)**, Introduction to artificial Intelligence, enrollment ~100 |
| Fall 2009-11 | Cornell | **AI Practicum: (CS4701)**, project course in AI applications in physical robotics, enrollment 25 |
| Fall 2007 | Cornell | **AI Practicum: Robotics and embodied AI (CS473)**, project course in AI applications in physical robotics, enrollment 25 |
| Fall 2002,4,6,8 | Cornell | **Evolutionary Computation and Design Automation (CS750/ MAE650)**, Graduate course covering evolutionary computation and applications, enrolment ~25 |
| Spring 2001-8 | Cornell | **Mechanical Engineering Synthesis (MAE225)** on product design process, Required Introductory Sophomore course enrolment ~120-140 |
| Fall 2002,3,5 | Cornell | **Data structures and algorithms for Computational Science (CIS409/MAE409)**, Advanced undergraduate / Beginning graduate course in, on algorithm design for non-CS majors, enrollment ~15 |
| Fall 2001 | Cornell | **Geometric Modeling and Computer Aided Design (MAE580)**, covering mathematical models of geometry and topology |

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|---|---|---|
| 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 Assistant) |
| 1996-1997 | Technion | Computer Aided Design Laboratory (Project Tutor) |
| 1995-1997 | Technion | Fluid Mechanics (Teaching Assistant) |

**Graduate and Postdoc Students**

Current PhD Students

1. **Jiong Lin** 2023-present, Guided Assembly, Metamodeling (Mechanical Engineering)
2. **Ani Iyer** 2022-present, TBD, (Mechanical Engineering)
3. **Judah Goldfeder** 2022-present, "Label Learning", (Computer Science)
4. **Max Segan** 2021-present, "Foundation Models", (Computer Science)
5. **Yuang Hu** 2021-present, "Facially expressive Robot", (Mechanical Engineering)
6. **Zechen Xiong** 2018-present, "Actuated Buckling", (Erath and Environmental)

Graduated PhD Students (Committee chair)

7. **Hayley McClintok** 2020-2024, "Carbon Fiber Lattices", (Mechanical Engineering)
8. **Philippe Wyder** 2018-2024, "Robot Metabolism", (Mechanical Engineering)
9. **John Whitehead**, 2018--2024, "Inverted Laser Sintering", (Mechanical Engineering).
10. **Robert Kwiatkowski** 2018-2022, "Self-Modeling Systems", (Computer Science)
11. **Boyuan Chen-** 2018-2022, "Robot Theory of Mind", (Computer Science)
12. **Boxi Xia 2017-**2022, "Soft Robotics", (Mechanical Engineering)
13. **Jonathan Blutinger-** 2017-2022, "Laser Cooking", (Mechanical Engineering)
14. **Joni Mici,** 2015-2022, "Layered Assembly", (Mechanical Engineering).
15. **Yazmin Feliz** – 2015-2020, "3D Ultrasound", (Mechanical Engineering)
16. **Oscar Chang -** 2016-2020, "Autogenerative networks", (Computer Science).
17. **Siyuan Chen** - 2015-2019, "Data Smashing", (Mechanical Engineering).
18. **Richa Batra -** 2014-2019, "Particle Robotics", (Mechanical Engineering).
19. **Nick Cheney**, 2012-2017, "Automated Design of Embodied Machines", (Comp. Biology).
20. **Igor Labutov**, 2010-2016, "Machine Teaching", (Electrical Engineering).
21. **Jason Yosinski**, 2011-2016, "Deep learning", (Computer Science).
22. **Jeff Lipton,** 2010-2015, 3D printing, (Mechanical Engineering).
23. **Robert MacCurdy**, 2009-2015, Machine Self Reflection (Mechanical Engineering).
24. **Jonas Neubert**, 2008-2014, Programmable Matter (Mechanical Engineering).

25. **Ted Cornforth**, 2009-2014, “Reverse engineering dynamical systems”, (Comp. Biology)
26. **Daniel Ly**, 2009-2013, Automated Telescience (Mechanical Engineering).
27. **John Amend**, 2008-2013, Jamming robotics: Programmable Phase Transition Materials (Mechanical Engineering).
28. **Jonathan Hiller**, 2006-2011, Digital Manufacturing (Mechanical Engineering).
29. **Michael Schmidt**, 2006-2010, Co-evolutionary System Identification (Computational Biology).
30. **Michael Tolley**, 2005-2010, Micro Self-Assembling Stochastic Robotics (Field: ME). Currently Faculty at University of California San Diego (UCSD).
31. **Daniel L. Cohen**, 2005-2010, 3D Bioprinting (Mechanical Engineering).
32. **Evan Malone**, 2002-2008; Multimaterial Solid Freeform Fabrication of Active Systems (Mechanical Engineering).
33. **Viktor Zykov**, 2003-2007, Damage Diagnosis and Repair in Robotic Systems (Mechanical Engineering).

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).

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. **Jonathan Blutinger,** 2022-2023, Food Printing and Laser cooking
2. **Yazmin Feliz,** 2020-2021, 3D Ultrasound
3. **Li Sun,** 2018-2019, Earthquake Modeling
4. **Aslan Miriyev**, 2015-2018, Soft Actuators
5. **Jun Ogawa** (2015-2016) Evolutionary Robotics

6. **Petar Curkovic**, 2014-2015, Design Automation
7. **Shuguang Li**, 2014-2015, Morphing Robotics
8. **Navneet Bhalla**, 2014-2015, Self-Assembly
9. **Ishanu Chattopadhyay**, 2011-2014, Machine Learning.
10. **Daniel Ly** 2013-2014, Automated Modeling
11. **Jonathan Platkiewicz**, 2013-2014, Haptic sensing.
12. **Sebastian Risi**, 2012-2013, Neuroevolution.
13. **Ben Finio**, 2012-2013, Manufacturing Education.
14. **Jeff Clune**, 2010-2012, Evolutionary design and modularity,
15. **David Kou,** 2010, CAD/CAM.
16. **Juan Zagal**, 2008-2010, Machine Self-reflection.
17. **Eric Schweikardt**, 2008-2009, Modular Robotics..
18. **Kyung-Joong Kim**, 2006-2009, Cognitive evolutionary robotics.
19. **Nicolas Lassabe**, 2008, Modular robotics
20. **Viktor Zykov**, 2008, Damage Diagnosis and Repair in Robotic Systems
21. **John Reiffel**, 2006-2007, Tensegrity robotics.
22. **Anupam Saxena**, 2005-2007, Inference of biological networks.
23. **Sanjeev Kumar**, 2004-2006, Algorithms for Muskuloskeletal inference.
24. **Mark Masry**, 2004-2005, Algorithms for 3D Sketch understanding.
25. **Chandana Paul**, 2004-2005, Tensegrity Robotics
26. **Josh Bongard**, 2003-2006, Co-evolutionary algorithms for system design and analysis.

**Honors and Awards Received**

- Evostar 2024 Julian F. Miller Award “For important contributions to the algorithmic exploration and embodiment of evolution, development and learning”
- ICRA 2024 "Best Demo Award" at the Workshop on Unconventional Robots (Tokyo May 2024).
- ACM GECCO 2023 Impact award “For most impactful paper in the past decade in the field of evolutionary computation”
- Laureate of the 2022 Aurel Stodola Medal (ETH Zurich)
- Columbia Engineering Alumni Association (CEAA) Distinguished Faculty Teaching Award, 2021
- Outstanding Publication of the Decade 2004-2014, International Society for Artificial Life 2019
- Second place, Robotic Art competition, 2018 (RobotArt.org)
- Student Best Paper award, Robosoft, 2018

- First place, Robotic Art competition, 2017 (RobotArt.org)
- 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. Hu, Y., Chen, B., Lin, J., Wang, Y. Mehlman, C., & Lipson, H. (2024). Human-robot facial coexpression. **Science Robotics**, 9(88), eadi4724
2. Guo, G., Ray, A., Izydorczak, M., Goldfeder, J., Lipson, H., & Xu, W. (2024). Unveiling intra-person fingerprint similarity via deep contrastive learning. **Science Advances**, 10(2), eadi0329..
3. JN Kutz, SL Brunton, K Manohar, H Lipson, N Li - , (2024) AI Institute in Dynamic Systems: Developing machine learning and AI tools for scientific discovery, engineering design, and data-driven control, AI Magazine, 2024
4. Whitehead, J., & Lipson, H. (2023). Inverted laser sintering of metal powders. Scientific Reports, 13(1), 20013.
5. McClintock, H., Xiong, Z., Rergis, B., & Lipson, H. (2023). Design and fabrication of carbon fiber lattices using 3D weaving. Scientific Reports, 13(1), 14919.
6. H Lipson, S Sukkarieh, (2023)Robots may transform the way we produce and prepare food, Nature Reviews Bioengineering 1 (11), 795-798
7. Blutinger, J. D., Cooper, C. C., Karthik, S., Tsai, A., Samarelli, N., Storvick, E., … Lipson H & Lipson, H. (2023). The future of software-controlled cooking. ***Nature Science of Food***, 7.
8. Whitehead J, Lipson H (2022) "Multi-Process Printing Method Combining Powder and Resin Based Additive Manufacturing" ***Additive Manufacturing Letters***, 2022
9. Whitehead J, Lipson H (2022) "Embedding Components During Laser Sintering" ***Additive Manufacturing Letters***, 2022
10. Nelson, B. J., Dupont, P., Floreano, D., Goldberg, K., Gu, H., Jacobstein, N., … Lipson H & Lipson, H. (2022). What we look for at Science Robotics. ***Science Robotics***, 7(71), eade5834.
11. Perich, C., MacCurdy, R., Macner, A., Mici, J., Steen, P., & Lipson, H. (2022). Electro-Osmotic Gripper Characterization for Layered Assembly. ***3D Printing and Additive Manufacturing***, 9(4), 337-347.
12. Chen, B., Kwiatkowski, R., Vondrick, C., & Lipson, H. (2022). Fully body visual self-modeling of robot morphologies. ***Science Robotics***, 7(68), eabn1944.

13. Chen, B., Huang, K., Raghupathi, S., Chandratreya, I., Du, Q., & Lipson, H. (2022). Automated discovery of fundamental variables hidden in experimental data. ***Nature Computational Science***, 2(7), 433-442.
14. Sofia Di Toro Wyetzner, Salvy Cavicchio, Andrew Moshova, Hod Lipson (2022) "Regenerative Topology Optimization of Fine Lattice Structures", **Journal of 3D Printing and Additive Manufacturing**
15. Wyder, Philippe M., and Hod Lipson. "Visual design intuition: predicting dynamic properties of beams from raw cross-section images." **Journal of the Royal Society Interface 18.184** (2021): 20210571.
16. Tai, A., Chun, M., Gan, Y., Selamet, M., & Lipson, H. (2021). PARA: A one-meter reach, two-kg payload, three-DoF open source robotic arm with customizable end effector. **HardwareX**, 10.
17. Faraj, Z., Selamet, M., Morales, C., Torres, P., Hossain, M., Chen, B., & Lipson, H. (2021). Facially expressive humanoid robotic face. ***HardwareX***, 9, e00117.
18. Blutinger, J. D., Tsai, A., Storvick, E., Seymour, G., Liu, E., Samarelli, N., ... & Lipson, H. (2021). Precision cooking for printed foods via multiwavelength lasers. ***NPJ science of food***, 5(1), 1-9.
19. Floreano, D., & Lipson, H. (2021). From individual robots to robot societies. ***Science Robotics***, 6(56), eabk2787.
20. Perich, C., MacCurdy, R., Macner, A., Mici, J., Steen, P., & Lipson, H. (2021). Electro-Osmotic Gripper Characterization for Layered Assembly. ***Journal of 3D Printing and Additive Manufacturing.***
21. Chen, B., Vondrick, C., & Lipson, H. Visual behavior modelling for robotic theory of mind. ***Scientific reports***, 11(1), 424.
22. Whitehead, J., & Lipson, H. (2020). Inverted multi-material laser sintering. ***Additive Manufacturing***, 36, 101440.
23. Hiller, J., Mici, J., & Lipson, H. (2020). Layered assemblers for scalable parallel integration. ***Journal of the Royal Society Interface***, 17(171), 20200543-20200543.
24. Xia, B., Miriyev, A., Trujillo, C., Chen, N., Cartolano, M., Vartak, S., & Lipson, H. (2020). Improving the Actuation Speed and Multi-Cyclic Actuation Characteristics of Silicone/Ethanol Soft Actuators. In ***Actuators*** (Vol. 9, No. 3, p. 62). MDPI AG.
25. West, J. D., Mici, J., Jaquith, J. F., & Lipson, H. (2020). Design and optimization of millimeter-scale electroadhesive grippers. ***Journal of Physics D Applied Physics***, 53(43), 435302.

26. Lehman, J., Clune, J., Misevic, D., Adami, C., Altenberg, L., Beaulieu, J., ... & Yosinski, J. (2020). The Surprising Creativity of Digital Evolution: A Collection of Anecdotes From the Evolutionary Computation and Artificial Life Research Communities. ***Artificial life***, 26(2), 274-306.
27. Wiesner-Hanks, T., Wu, H., Stewart, E., DeChant, C., Kaczmar, N., Lipson, H., ... & Nelson, R. J. (2019). Millimeter-level plant disease detection from aerial photographs via deep learning and crowdsourced data. ***Frontiers in plant science***, 10, 1550.
28. Lipson, H. "Robots on the run (vol 4, eaau5872, 2019)." **Nature** 576.7787 (2019): 397-397.
29. Mici, J., Ko, J. W., West, J., Jaquith, J., & Lipson, H. (2019). Parallel electrostatic grippers for layered assembly. **Additive Manufacturing**, 27, 451-460
30. Wu, Harvey, et al. "Autonomous detection of plant disease symptoms directly from aerial imagery." **The Plant Phenome Journal** 2.1 (2019).
31. Blutinger, Jonathan David, Yorán Meijers, and Hod Lipson. "Selective laser broiling of Atlantic salmon." **Food research international** 120 (2019): 196-208
32. A Miriyev, B Xia, JC Joseph, H Lipson "Additive Manufacturing of Silicone Composites for Soft Actuation**", 3D Printing and Additive Manufacturing** 6 (6), 309-318
33. Kwiatkowski, R., & Lipson, H. (2019). Task-agnostic self-modeling machines. **Science Robotics**., 4, eaau9354.
34. Li, S., Batra, R., Brown, D., Chang, H. D., Ranganathan, N., Hoberman, C. Rus D, Lipson, H. (2019). Particle robotics based on statistical mechanics of loosely coupled components. **Nature**, 567(7748), 361.
35. J Mici, JW Ko, J West, J Jaquith, H Lipson (2019) "Parallel Electrostatic Grippers for Layered Assembly ", **Additive Manufacturing** (in press)
36. Lipson H., (2019) "Robots On The Run", Nature 568, 174-175 (2019)
37. Blutinger, J. D., Meijers, Y., & Lipson, H. (2019). Selective laser broiling of Atlantic salmon. **Food Research International**, 120, 196-208.
38. Cartolano, M., Xia, B., Miriyev, A., & Lipson, H. (2019, March). Conductive Fabric Heaters for Heat-Activated Soft Actuators. In **Actuators** (Vol. 8, No. 1, p. 9). Multidisciplinary Digital Publishing Institute.
39. Blutinger, J. D., Meijers, Y., Chen, P. Y., Zheng, C., Grinspun, E., & Lipson, H. (2019). Characterization of CO2 laser browning of dough. Innovative **Food Science & Emerging Technologies**, 52, 145-157.
40. Chen, P. Y., Blutinger, J. D., Meijers, Y., Zheng, C., Grinspun, E., & Lipson, H. (2019). Visual modeling of laser-induced dough browning. **Journal of food engineering**, 243, 9-21.

41. Fabian Stute, Joni Mici, Lewis Chamberlain, Hod Lipson, (2019) "Digital Wood: 3D Internal Color Texture Mapping" **3D Printing and Additive Manufacturing** Vol 5 No 4 pp 285-291
42. Wiesner-Hanks, T., Stewart, E. L., Kaczmar, N., DeChant, C., Wu, H., Nelson, R. J., ... & Gore, M. A. (2018). Image set for deep learning: field images of maize annotated with disease symptoms. **BMC research notes**, 11(1), 440.
43. Hertafeld, E., Zhang, C., Jin, Z., Jakub, A., Russell, K., Lakehal, Y., ... & Lipson, H. (2018). Multi-material three-dimensional food printing with simultaneous infrared cooking. 3D Printing and Additive Manufacturing, 6(1), 13-19.
44. Cheney, N., Bongard, J., SunSpiral, V., & Lipson, H. Scalable Co-Optimization of Morphology and Control in Embodied Machines. **Royal Society Interface**, In review (second cycle)
45. Blutinger, J. D., Meijers, Y., Chen, P. Y., Zheng, C., Grinspun, E., & Lipson, H. (2018). Characterization of dough baked via blue laser. **Journal of Food Engineering**, 232, 56-64.
46. A Miriyev, G Caires, H Lipson, (2018) Functional properties of silicone/ethanol soft-actuator composites, **Materials & Design** 145, 232-242
47. Cellucci, D., MacCurdy, R., Lipson, H., & Risi, S. (2017). 1D Printing of Recyclable Robots. IEEE **Robotics and Automation Letters,** 2(4), 1964-1971.
48. Miriyev, A., Stack, K., & Lipson, H. (2017). Soft material for soft actuators. **Nature communications**, 8(1), 596.
49. DeChant, C., Wiesner-Hanks, T., Chen, S., Stewart, E. L., Yosinski, J., Gore, M. A., ... & Lipson, H. (2017). Automated identification of northern leaf blight-infected maize plants from field imagery using deep learning. **Phytopathology**, 107(11), 1426-1432.
50. Amend J, Lipson H (2017) "The JamHand: Dexterous Manipulation with Minimal Actuation" **Soft Robotics** 4 (1), 70-80
51. Grouchy, P., D'Eleuterio, G. M., Christiansen, M. H., & Lipson, H. (2016). "On The Evolutionary Origin of Symbolic Communication". **Scientific Reports**, 6.
52. Lipton, J. I., & Lipson, H. (2016). 3D printing variable stiffness foams using viscous thread instability. **Scientific Reports**, 6.
53. Lipton JI, Angle S, Banai RE, Peretz E, Lipson H, (2016) "Electrically Actuated Hydraulic Solids", **Advanced Engineering Materials** 18 (10), 1710-1715
54. 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
55. Cheney, N., & Lipson, H. (2016). Topological evolution for embodied cellular automata. **Theoretical Computer Science**, 633, 19-27.

56. 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
57. Platkiewicz, J., Lipson, H., & Hayward, V. (2016). Haptic Edge Detection Through Shear. **Scientific reports**, 6
58. J Neubert, H Lipson Soldercubes: a self-soldering self-reconfiguring modular robot system, **Autonomous Robots** 40 (1), 139-158
59. 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.
60. 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
61. 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
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336. Pollack, J. B. and Lipson H. (2000) "The GOLEM Project: Evolving Hardware Bodies and Brains", The *Second NASA/DoD Workshop on Evolvable Hardware*, July 13-15, 2000, Palo Alto, California, USA.

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343. Lipson, H. and Shpitalni, M. (1997) "Conceptual Design of Sheet Metal Products by Sketching", *Proc. of the Int. Conf. on Sheet Metal SheMet'98*, pp. 171-180, Enschede, Holland, April 7-9, 1998.

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349. Lipson, H. and Shpitalni, M. (1996) "Decomposition of a 2D polygon into a minimal set of disjoint primitives", *CSG96 Conference on Set-Theoretic Solid Modeling*, Winchester, UK, April 1996, pp. 65-82.

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**Other conference papers**

351. Studer G. and Lipson H. (2005) "Spontaneous emergence of self-replicating, competing cube species in physical cube automata", GECCO Late Breaking Paper.

352. Schmidt M. and Lipson H. (2005) "Co-evolution of Fitness Maximizers and Fitness Predictors", GECCO Late Breaking Paper.

353. Bongard J.B., Lipson H., (2005) "Reinventing the Wheel: Experiments in Evolutionary Geometry", GECCO Late Breaking Paper.

354. Anand, V., Lipson, H., Valero-Cuevas, F.J. (2005) "Blind Inference of Nonlinear Cable Network Topology from Sparse Data", GECCO Late Breaking Paper.

355. 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**

356. 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.

357. 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**

358. 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

359. Lipson, H. and Kurman M. (2016) "Driverless: Intelligent cars and the road ahead”, MIT Press

360. Lipson, H. and Kurman M. (2013) "Fabricated: The new world of 3D printing”, Wiley Press.

361. 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

362. 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)

363. 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.

364. 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., Zitzle,r E., Arnold, E., Tyrrel,l A., Cantu-Paz, E., Soule, T., Llora, 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.

365. 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

366. Lipson, H. (2008) "The Inevitable Magic of Artificial Life," in Pfeifer R., (Ed.) *The Rediscovery of Intelligence*, pp. 114-115.
367. Van Breugal, F., Teoh, Z.E., Lipson H. (2007) "A Passively Stable Hovering Flapping Micro Air Vehicle", in D. Floreano et al. (eds.), **Flying Insects and Robots**, pp. 171-184, Springer.
368. Lipson, H. (2007) "Curious and Creative Machines," in Pfeifer R., Bongard J.B., Lungarella (Eds.) *50 Years of AI*, Festschrift, LNAI 4850, pp. 316-320.
369. Lipson, H. (2005) "Evolutionary Design and Evolutionary Robotics", *Biomimetics*, CRC Press (Bar Cohen, Ed.), pp. 129-155.
370. Lipson, H. (2002) "Towards Synthetic Evolution of Nanostructures", in Chakraborty T., (Ed.) *Nano-Physics & Bio-Electronics - A new Odyssey*, pp. 341-352.
371. Pollack, J. B., Lipson, H., Ficici, S. G., Funes, P., Hornby, G., Watson, R.A. (2001). "Evolutionary Techniques in Physical Robots," in *Creative Evolutionary Systems*, Peter J. Bently and David W. Corne (eds). Morgan-Kaufmann, 2001, pp. 511-520.
372. Lipson, H. and Siegelmann, H.T. (2000), "High Order Eigentensors as Symbolic Rules in Competitive Learning", in S. Wermter, R. Sun (Eds.) *Hybrid Neural Systems*, Springer, LNCS 1778, pp. 286-297.
373. Shpitalni, M., Lipson, H., (1998), "Product Development and CAD/CAM", in F.L.Krause, Ed., *Product Modeling*, Verlag, Berlin.

**Issued Patents**

| | | | |
|---|---|---|---|
| 1. | 7,625,198 | 12/1/2009 | Modular Fabrication Systems and Methods |
| 2. | 7,939,003 | 5/10/2011 | Modular Fabrication Systems and Methods |
| 3. | 8,636,938 | 1/28/2014 | Modular Fabrication Systems and Methods |
| 4. | 8,877,112 | 11/4/2014 | Modular Fabrication Systems and Methods |
| 5. | 9,242,031 | 1/26/2016 | Modular Fabrication Systems and Methods |
| 6. | ZL200980137301.6 | | Apparatus and Methods for Digital Manufacturing |
| 7. | 8,996,155 | 3/31/2015 | Apparatus and Methods for Digital Manufacturing |
| 8. | 8,884,496 | 11/11/2014 | Fluid Current Energy Capture Apparatus and Method |
| 9. | 9,556,947 | 1/31/2017 | Bidirectional Gear, Method, and Applications |
| 10. | ZL 2011 8 0022498.6 | 9/16/2015 | Bidirectional Gear, Method, and Applications |

11. 9,079,337 7/14/2015 Systems and Methods for Freeform Fabrication of Foamed Structures
12. 8,882,165 11/11/2014 Gripping and Releasing Apparatus and Methods
13. 9,120,230 9/1/2015 Gripping and Releasing Apparatus and Methods
14. 9,723,866 8/8/2017 A System and Method for Solid Freeform Fabrication of Edible Food
15. 8,992,183 3/31/2015 System and Methods for Moving Objects Individually and in Parallel
16. 9,098,913 8/4/2015 Prediction of Successful Grasps by End of Arm Tooling
17. 9,487,387 11/8/2016 System and Methods for Actuation Using Electro-Osmosis
18. 9,579,219 2/28/2017 Robotic Apparatus, Method, and Applications

**Invited Talks, Keynotes, and Colloquia**

1. Invited Speaker, "The Next AI", CEO Annual Summit, Fort Lauderdale, April 1, 2023
2. Colloquium Speaker, "Self-Aware Machines", ME/CS Department, University of Illinois at Urbana Champaign, Champaign IL, March 30, 2023
3. Invited Speaker, "The Next AI", Singtel Executive Briefing, Singapore, March 22, 2023
4. Invited Speaker, "Artificial Intelligence and Robotics", YPO Executive Briefing, New York NY, March 14, 2023
5. Invited Lecture, "Automating Discovery", ETH Zurich, Zurich Switzerland, Dec 22, 2022
6. Keynote, "Artificial Intelligence and Robotics", Entrepreneurial Organization (EO) Delhi Chapter, New Delhi, India, Dec 16, 2022
7. Invited Speaker, "Artificial Intelligence and Robotics", Kentucky Fried Chicken (KFC) executive Briefing, San Francisco CA, Dec 1, 2022
8. Invited Speaker, "Artificial Intelligence and Robotics", HSM Summit, São Paulo, Brazil, Nov 23, 2022
9. Keynote, "The Next AI", Harman Automotive, Querétaro, Mexico, Oct 25, 2022
10. Invited Speaker, "Artificial Intelligence and Robotics", HSM Executive Briefing, São Paulo, Brazil, Oct 24, 2022
11. Keynote, "AI and Mobility", Novus Glass Summit 2022, Dallas Fort Worth, TX, October 20, 2022
12. Invited Speaker, "The Next AI", Singularity University Executive Program, San Francisco, CA, October 3, 2022
13. Keynote, "AI and Mobility", Fix Network Summit 2022, Quebec City, Canada Sep 29, 2022
14. Seminar, "The Next AI", U.N. Delegation on education, New York NY September 19, 2022

15. Invited Speaker, “The Next AI”, Visa Corporation, Campos do Jordão, Brazil, June 28, 2022
16. Invited Speaker, “Artificial Intelligence and Robotics”, Visa Corporation, São Paulo, Brazil, June 24, 2022
17. Invited Speaker, “The Next AI”, Ventu Cotton, San Francisco, CA, June 17, 2022
18. Keynote, “Consciousness: The dawn of Machine awareness”, European Commission Science Summit 2022, (online), May 11, 2022, June 14, 2022
19. Keynote, “The Six Waves of Artificial Intelligence”, from Creative Collaborations Conference, Ben Gurion University, May 11, 2022, Be’er Sheva, Israel
20. Seminar Speaker, “Automating Discovery – From Cognitive Robotics to Systems Biology”, ABC Robotics, Ben Gurion University, May 9, 2022, Be’er Sheva, Israel
21. Invited Speaker, “AI and Robotics”, Kazakhstan YPO, Menlo Park CA, May 3, 2022
22. Invited Speaker, “Self-Aware Machines”, Machine Learning, AI, Robotics and Space (MARS), Mar 29, 2022 Ojai Valley, CA
23. Keynote, “The Six Waves of Artificial Intelligence”, Money Management Institute Annual Summit, Palm Beach FL, March 24, 2022
24. Invited Speaker, “Robotics and AI”, NextEra executive retreat, March 23, 2022 (online)
25. Keynote, “Automating Discovery – From Cognitive Robotics to Systems Biology”, NSF AI Institute on Dynamical Systems Launch, University of Washington, Mat 16, 2022, Seattle WA
26. Invited Speaker, “AI and Robotics”, Singularity University Executive Program, Menlo Park CA, March 7, 2022
27. Invited Speaker, “Automating Discovery – From Cognitive Robotics to Particle Physics”, Distinguished Lectures Seminar Series, University of Southern California, Feb 22, 2022 (online)
28. Invited Speaker, “The Six Waves of Artificial Intelligence”, Money Management Institute Board of Directors, January 20, 2022 (online)
29. Invited Speaker, “Trends in AI and Robotics””, RFF Future of Space Operations, Online, January 12, 2022
30. Invited Speaker, “The Six Waves of Artificial Intelligence”, SEAS Employee Engagement Speaker, New York NY, Dec 9, 2021
31. Invited Speaker, “The Six Waves of Artificial Intelligence”, Alsea Board Meeting, Dec 9, 2021 (online)
32. Invited Speaker, “AI and Robotics”, Singularity University Executive Program, Menlo Park CA, Nov 7, 2021
33. Invited Talk, “AI and CAD”, Autodesk Advisory Board, Boston MA, Dec 2, 2021

34. Invited Speaker, “AI and Robotics”, Singularity University Executive Program, Menlo Park CA, Nov 7, 2021
35. Invited Speaker, “Robotics and AI”, Sony executive retreat, October 19, 2021 (online)
36. Invited Speaker, “Self-Modeling Systems”, ICCV Simulation Technology for Embodied AI workshop, Oct 16, 2021 (online)
37. Keynote, “The four phases of Additive Manufacturing”, NANO IL, Online, Oct 6, 2021
38. Invited Speaker, “Trends in AI and Robotics”, University of Notre Dame Emerging Tech, Oct 1, 2021 (online)
39. Invited Speaker, Innovation Salon, Columbia Business School, “Trends in AI and Robotics”, Sep 23, New York, NY
40. Invited Speaker, “Future of Mobility”, Ernst & Young Disruptive Tech Series, Online, Sep 14, 2021
41. Invited Speaker, “The Next AI”, Tiger 21 Board meeting, July 7, 2021
42. Invited Speaker, “Future of Mobility”, Ernst & Young Disruptive Tech Series, Online, June 9, 2021
43. Invited Speaker and panelist, “Trends in AI and Robotics””, RFF Future of Space Operations, Online, April 27, 2021
44. Keynote, “Soft Actuators for Soft Robotics”, Robosoft 2021, Online, April 16, 2021
45. Invited Speaker and panelist, “Self-Aware Machines”, International Workshop on Embodied Intelligence, March 24, 2021
46. Keynote, “Trends in AI and robotics”, New York Academy of Dentistry, Online, March 11, 2021
47. Keynote, “3D Printing: The Next 25 Years”, CEO Webcast, Online, March 6, 2021
48. Keynote, “Future of AI and Robotics”, ARPA-E Annual Fission Meeting, Online, Feb 23, 2021
49. Keynote, “Future of AI and Robotics”, Arrow EMEA Leadership, Online, Feb 16, 2021
50. Invited Speaker, “Future of Mobility”, Ernst & Young Disruptive Tech Series, Online, Feb 9, 2021
51. Keynote, “Artificial Intelligence: The Next 25 Years”, Aditya Birla Group BizlabsNXT Digital AI Conclave, Online, Jan 28, 2021
52. Keynote, “Automating Discovery”, Design Computing and Cognition (DCC) 2020, Online, Dec 14, 2020
53. Keynote, “Artificial Intelligence: The Next 25 Years”, CEO Webcast, Online, Nov 30, 2020
54. Invited Speaker, “Future of Mobility”, Ernst & Young Disruptive Tech Series, Online, Oct 26, 2020

55. Keynote, “Big Data in Manufacturing”, Michigan Manufacturing Leadership Series, Online, Oct 8, 2020
56. Keynote, “Deep Learning in Computer Aided Design”, Altair Global ATC, Online, Oct 6, 2020
57. Invited Speaker and panelist, “Future50: Leadership & Strategy in the age of AI”, RFF, Online, Aug 26, 2020
58. Invited Speaker, “Can We Learn To Stop Worrying and Love AI?”, American Society of Composers, Authors and Publishers (ASCAP) Lab Speaker Series, Online, Aug 25, 2020
59. Invited Speaker, “Automating Discovery””, Food and Drug Administration (FDA), Online, August 7, 2020
60. Invited Speaker, “Automating Discovery””, IEEE World Congress on Computational Intelligence (WCCI), Online, July 20, 2020
61. Invited Speaker, “Trends in Robotics and AI”, Citibank Unstoppable Trends, July 29, 2020
62. Invited Speaker, “Trends in Robotics and AI”, Procter & Gamble| Cincinnati, OH, Feb 25, 2020
63. Invited Speaker, Soft Robotics 2020, “Soft Actuators for Soft Robotics”, Haifa Israel, Feb 5, 2020
64. Keynote, A360, “Autonomous Vehicles”, Los Angeles, CA, Jan 20, 2020
65. Invited Speaker, CVC Annual Retreat, “Trends in Robotics and AI”, Palm Beach FL, Jan 9, 2020
66. Keynote, Edge Connex Annual Retreat, “Trends in Artificial Intelligence”, Washington DC, Dec 12, 2019
67. Invited Speaker, Envision 2020, “AI Ethics”, Princeton NJ, Nov 22, 2019
68. Invited Speaker, Citibank Singapore, “Trends in Robotics and AI”, Singapore, Nov 14, 2019
69. Keynote, 3D Printing and Beyond, “The four waves of Additive Manufacturing”, Jerusalem Israel, Nov 7, 2019
70. Invited Speaker, Citibank Singapore, “Trends in Robotics and AI”, Singapore, Nov 3, 2019
71. Keynote, WE Summit, “Self Aware Machines”, Beijing, Nov 2, 2019
72. Keynote, Columbia Dental School, “Artificial Intelligence in Dentistry”, New York NY, Sep 29, 2019
73. Invited Speaker, Citibank, “Trends in Robotics and AI”, Santa Clara CA, Oct 22, 2019
74. Invited Speaker, Citibank Singapore, “Trends in Robotics and AI”, Singapore, Sep 25, 2019
75. Keynote, Teacher’s College, “AI in Education”, New York NY, Sep 20, 2019
76. Keynote, Goldman Sachs investor retreat, “Trends in Artificial Intelligence”, New York NY, Sep 19, 2019

77. Keynote, AkzoNobel Annual Summit, “Autonomous Vehicles”, New Orleans, LA, Sep 18, 2019
78. Invited Speaker, LG, “Trends in 5G”, Santa Clara CA, Sep 17, 2019
79. Invited Speaker, YPO Long Island, “Trends in Artificial Intelligence”, Long Island NY, Sep 13, 2019
80. Keynote, Goldman Sachs investor retreat, “Trends in Artificial Intelligence”, New York NY, Sep 12, 2019
81. Invited Speaker, Moody, “Trends in Artificial Intelligence”, New York NY, Sep 10, 2019
82. Invited Speaker, Citibank Singapore, “Trends in Robotics and AI”, Singapore, Aug 26, 2019
83. Keynote, Epigenetic Robotics, EPIROB 2019, “Cognitive Robotics”, Oslo, Norway, Aug 20, 2019
84. Invited Speaker, Exxon Mobil, “Trends in Robotics and AI”, Luanda, Angola, Aug 16, 2019
85. Keynote, tech HR, “Artificial Intelligence”, Delhi, Aug 1, 2019
86. Invited Speaker, US DDI, “Trends in Robotics and AI”, Washington DC, July 30, 2019
87. Invited Speaker, DDI, “Trends in Robotics and AI”, Washington DC, July 30, 2019
88. Keynote, SAP Summit, “Artificial Intelligence”, Philadelphia PA, July 24, 2019
89. Invited Speaker, Singularity University EIP, “Trends in Robotics and AI”, Mountain View CA, July 22, 2019
90. Keynote, CARSTAR Annual Summit, “Autonomous Vehicles”, Chicago IL, July 10, 2019
91. Keynote, BBVA Annual Retreat, “Machine Learning and Big Data”, Madrid, Spain, June 26, 2019
92. Keynote, Cargill Annual Retreat, “Machine Learning and Big Data”, Wichita KS, June 24, 2019
93. Invited Speaker, Italy Singularity Summit, “Machine Learning and Big Data”, Rome, Italy, June 18, 2019
94. Keynote, IBIS Automotive Summit, “Artificial Intelligence and the automotive industry”, Milan Italy, June 10, 2019
95. Invited Speaker, BWI GmbH, “Machine Learning and Big Data”, Berlin Germany, June 4, 2019
96. Invited Speaker, Singularity University EIP, “Trends in Robotics and AI”, Mountain View CA, May 20, 2019
97. Keynote, World Retail; Congress, “The Six Waves of AI”, Amsterdam, Netherlands, May 15, 2019
98. Keynote, Canadian Assoc of Pharmacy, “The Six Waves of AI”, Carlsbad, CA, May 7, 2019

99. Invited Speaker, Singularity University WE Family Event, “Trends in Robotics and AI”, Mountain View CA, May 4, 2019
100. Invited Speaker, COBPEA, “Trends in Robotics and AI”, Mountain View CA, April 29, 2019
101. Keynote, EO Global Leaders’ Summit GLC, “The Six Waves of AI”, Maccau, China, April 14, 2019
102. Invited Speaker, Booz Allen, “Trends in Robotics and AI”, Washington DC, March 26, 2019
103. Invited Speaker, Temaseak, “Smart Cities”, Singapore, March 20, 2019
104. Invited Speaker, Citibank Wealth Management, “Trends in Robotics and AI”, Mountain View CA, March 13, 2019
105. Keynote, Lockheed Martin Retreat, “Trends in Robotics and AI”, Dallas/Fort Worth, TX, March 6, 2019
106. Invited Speaker, Finish Posti, “Machine Learning and Big Data”, Helsinki Finland, Feb 28, 2019
107. Keynote, AAWC, “AI in retail”, The World Congress of the International Advertising Association, Kochi, India, Feb 22, 2019
108. Colloquium, Duke University Pearsall Lecture, “Automating Discovery”, Durham NC, Feb 13, 2019
109. Invited Speaker, Elior Group, “Machine Learning and Big Data”, Mountain View CA, Feb 6, 2019
110. Invited Speaker, DoD, “Machine Learning and Big Data”, Mountain View CA, Jan 29, 2019
111. Keynote, Verifacts , “Driverless Cars and the Road ahead”, Toronto Canada, Jan 23, 2019
112. Colloquium, Washington University, “Automating Discovery”, Seattle WA, Jan 17, 2019
113. Invited Speaker, Quantonomics / Goldman Sachs, “The Six Waves of Artificial Intelligence”, New York NY, Jan 10, 2019
114. Invited Speaker, YPO Gold , “The Six Waves of Artificial Intelligence”, Zurich Switzerland, Dec 13, 2018
115. Invited Speaker, Schindler Exec Retreat, “The Six Waves of Artificial Intelligence”, Lucerne Switzerland, Dec 12, 2018
116. Invited Speaker, Cargill, “Machine Learning and Big Data”, Mountain View CA, Nov 9, 2018
117. Keynote, the Growth Faculty, “The Six Waves of Artificial Intelligence”, Sydney Australia, Nov 15, 2018

118. Invited Speaker, Pactual Asset Management, “Machine Learning and Big Data”, Mountain View CA, Nov 9, 2018
119. Keynote, Mexico Singularity Summit, “Machine Creativity”, Puerto Valencia, Mexico, Nov 7, 2018
120. Invited Speaker, The Entrepreneur Network, “Machine Learning and Big Data”, Mountain View CA, Nov 6, 2018
121. Colloquium, University of Connecticut, “Automating Discovery”, UConn, Nov 5, 2018
122. Invited Speaker, Citibank 10x Strategy, “Artificial Intelligence in Finance”, New York NY, Nov 1, 2018
123. Keynote, Entrepreneur Organization, “Machine Creativity”, San Francisco CA, Oct 18, 2018
124. Keynote, Altair Summit, “Machine Creativity”, Paris, France, Oct 17, 2018
125. Keynote, Deloitte Mexico, “AI in retail”, Mexico City, Mexico, Oct 10, 2018
126. Invited Speaker, Jasonville Energy Authority, “Machine Learning and Big Data”, Jacksonville FL, Oct 5, 2018
127. Invited Speaker, Equity Residential, “Machine Learning and Big Data”, Mountain View CA, Oct 3, 2018
128. Keynote, Italy Summit, “Machine Creativity”, Milan, Italy, Oct 2, 2018
129. Keynote, Agora Summit, “The Six Waves of Artificial Intelligence”, Tucson Arizona, Sep 28, 2018
130. Invited Speaker, Exxon Mobil, “Machine Learning and AI”, Houston TX, Sep 27, 2018
131. Invited Speaker, Raymond India, “Big Data”, Mumbai India, Sep 26, 2018
132. Keynote, Deloitte Ireland, “The Six Waves of Artificial Intelligence”, Dublin, Ireland, Sep 11, 2018
133. Invited Speaker, UPM, “Big Data”, Mountain View CA, Aug 27, 2018
134. Keynote, Asia Pacific Global Impact Challenge, “The Six Waves of AI”, Taiwan, Aug 10, 2018
135. Invited Speaker, A360, “Trends in Machine Learning and AI”, Mountain View CA, July 30, 2018
136. Invited Speaker, Singularity University, Executive Program, “Trends in Robotics and AI”, Mountain View CA, July 22, 2018
137. Invited Speaker, CASVI, “Trends in Machine Learning and AI”, Mountain View CA, July 18, 2018
138. Keynote, FAB14, “Food Printing”, Toulouse, France, July 16, 2018

139. Invited Speaker, Google/Australia, “Trends in Machine Learning and AI”, Mountain View CA, July 12, 2018
140. Invited Speaker, Singularity University, Exponential Innovation Program, “Trends in Robotics and AI”, Mountain View CA, July 9, 2018
141. Invited Speaker, LG Academy, “5G”, Mountain View CA, June 11, 2018
142. Keynote, Positive Impact, “The Six Waves of Artificial Intelligence”, Milan, Italy, June 20, 2018
143. Keynote, Accenture, “The Six Waves of Artificial Intelligence”, Frankfurt Germany , June 13, 2018
144. Invited Speaker, Peoplefund, “Trends in Machine Learning and AI”, Mountain View CA, June 11, 2018
145. Invited Speaker, Google/Singapore, “Machine Learning and AI”, Mountain View CA, June 7, 2018
146. Invited Speaker, Exxon Mobil, “Machine Learning and Digital Twins”, Houston TX, June 6, 2018
147. Keynote, STEP Miami, “Artificial Intelligence”, Miami FL, May 31, 2018
148. Guest Speaker, Unilever, “The Six Waves of Artificial Intelligence”, Palo Alto CA, May 29, 2018
149. Keynote, 21 Foundation, “Artificial Intelligence and Robotics”, Tokyo Japan, May 24, 2018
150. Invited Speaker, Barclays Bank, “The Six Waves of Artificial Intelligence”, London UK, May 18, 2018
151. Keynote, Inter-American Development Bank (IDB), “Autonomous Vehicles and the road ahead”, Washington DC, May 17, 2018
152. Keynote, Young Professional Organization (YPO), Dallas Chapter, “Artificial Intelligence”, Dallas, TX, May 10, 2018
153. Guest Speaker, Singularity Executive training program, “Artificial Intelligence and Robotics”, Moffet Field CA, May 6, 2018
154. Keynote, Executive Program Toronto, “AI and Robotics”, Toronto ON, May 1, 2018
155. Keynote, Young Professional Organization (YPO) of Switzerland, “Artificial Intelligence”, Geneva, Switzerland, April 26, 2018
156. Guest Speaker, Legal & General Investment Management America, Inc. (LGIMA), “Trends in Data Science”, Chicago IL, April 17, 2018
157. Guest Speaker, Singularity Executive training program, “Artificial Intelligence and Robotics”, Moffet Field CA, March 25, 2018

158. Guest Speaker, Grupo Salinas Executive retreat, “Artificial Intelligence”, Mexico City, Mexico, March 22, 2018
159. Keynote, Singularity University Czech Summit, “Curious and Creative Machines”, Prague, Czech Republic, March 6, 2018
160. Keynote, Latham & Watkins Annual Summit, “Trends in Artificial Intelligence”, New York NY, March 2, 2018
161. Invited Talk, Grupo Bal Retreat, “Trends in Artificial Intelligence and Robotics”, San Francisco CA, Feb 28, 2018
162. Guest Speaker, Citibank Private Bank, “Artificial Intelligence”, Mexico City, Mexico, Feb 22, 2018
163. Colloquium, Iowa State University Food Science Department, “Food Printing”, Des Moines IA, Feb 14, 2018
164. Invited Talk, Exxon Mobile Executive training, “Trends in Artificial Intelligence and Robotics”, Houston TX, Feb 20, 2018
165. Colloquium, Columbia University Astrophysics Department annual Radical Hypothesis Lecture, “Robot Scientists”, New York NY, Feb 14, 2018
166. Invited Talk, Google/Scandinavia “The four exponentials of Artificial Intelligence”, Mountain View CA, Feb 13, 2018
167. Keynote, Syracuse Research Corporation (SRC) “The six waves of Artificial Intelligence”, Syracuse NY, Feb 9, 2018
168. Keynote, Barclays Bank Summit, “The Compounding Exponentials of AI”, London, UK, Feb 8, 2018
169. Guest Speaker, The Executive Network (TEN), “Artificial Intelligence and Robotics”, Mountain View CA, Feb 6, 2018
170. Guest Speaker, Singularity Executive training program, “Artificial Intelligence and Robotics”, Moffet Field CA, Jan 30, 2018
171. Guest Speaker, Citibank Private Bank, “Artificial Intelligence”, New York NY, Jan 24, 2018
172. Invited Talk, Singularity University Summit, “Artificial Intelligence”, Brussels, Belgium, Jan 23, 2018
173. Keynote, Deloitte Future of Retail Summit, “AI and retail”, New York NY, Jan 16, 2018
174. Invited Talk, SEAS Alumni Event, “the Six Waves of Artificial Intelligence”, New York NY, Jan 16, 2018
175. Invited Talk, Jardine Matheson, “Artificial Intelligence and Robotics”, Mountain View, CA, Jan 10, 2018

176. Keynote, Stuyvesant High School Annual Splash, “Artificial Intelligence and Robotics”, New York NY, Dec 16, 2017
177. Invited Talk, Deloitte Partner meeting “Artificial Intelligence and Robotics”, Dallas, TX, Dec 7, 2017
178. Invited Talk, Raizen “Trends in Artificial Intelligence and Robotics”, Mountain View, CA, Nov 16, 2017
179. Keynote, NY Annual conference on Manufacturing an Innovation, NEXT 17, “The six waves of Artificial Intelligence”, Syracuse NY, Nov 17, 2017
180. Invited Talk, Citibank Financial, “Trends in Artificial Intelligence and Fintech”, Mountain View, CA, Nov 16, 2017
181. Keynote, Tencent Annual Summit, “AI, Creativity, and Free Will”, Chengdu, China, Nov 8, 2017
182. Invited Talk, Bridge 37, “Trends in Artificial Intelligence and Robotics”, Mountain View, CA, Nov 1, 2017
183. Keynote, Citibank private bank summit, “Trends in Artificial Intelligence and Robotics”, Shanghai, China, Oct 19, 2017
184. Invited Talk World Knowledge Fair (WKF 2017), “How 3D Printing will change our Future”, Seoul, Korea, Oct 18, 2017
185. Invited Talk World Knowledge Fair (WKF 2017), “The Fourth Industrial Revolution and the future of Manufacturing”, Seoul, Korea, Oct 17, 2017
186. Keynote, AI and Society, “The Six Waves of Artificial Intelligence”, Tokyo, Japan, Oct 10, 2017
187. Invited Talk, Exxon Mobile Executive training, “Trends in Artificial Intelligence and Robotics”, Houston TX, Oct 3, 2017
188. Invited Talk, “Stanley Black & Decker, The four exponentials of Artificial Intelligence”, Mountain View CA, Sep 28, 2017
189. Keynote, PricewaterhouseCoopers (PWC) partner annual summit, “Trends in Artificial Intelligence”, Banff, Canada, Sep 27, 2017
190. Invited Talk, Banco Bilbao Vizcaya Argentaria, BBVA “Artificial Intelligence in fintech”, , Mountain View CA, Sep 20, 2017
191. Invited Presentation, Worlds Fair Nano Main Stage: “The Future of Robots”, Brooklyn NY, Sep 16, 2017
192. Keynote, Canadian Autobody Conference, “Will driverless cars need collision repair?”, St John’s, Newfoundland, Canada, Sep 15, 2017

193. Keynote, Altair User Summit, “Curious and Creative Machines”, Los Angeles CA, Sep 13, 2017
194. Keynote, Bosch Future of Urban Mobility, “The future of Mobility”, London UK, Sep 8, 2017
195. Invited Talk, Google Norway, “The four exponentials of Artificial Intelligence”, Mountain View CA, Aug 30, 2017
196. Invited Talk, “Trends in Artificial Intelligence”, NEC AgTech, Mountain View CA, Aug 29, 2017
197. Invited Talk, “Trends in Artificial Intelligence”, Inter-American Development Bank, Mountain View CA, Aug 25, 2017
198. Invited Talk, “The future of Mobility”, NBC, Rosewood Sand Hill, CA, Aug 24, 2017
199. Invited Talk, “Driverless cars and the road ahead”, Bosch China, Shanghai China, Aug 7, 2017
200. Keynote, “Curious and Creative Machines”, GEEK PARK Rebuild 2017 Summit, Beijing China, Aug 5, 2017
201. Invited Talk, “Driverless cars and the road ahead”, GEEK PARK Rebuild 2017 Summit, Beijing China, Aug 5, 2017
202. Invited Talk, “Artificial Intelligence in retail”, AB InBev, New York NY, Aug 1, 2017
203. Keynote, ACM/Eurographics Symposium on Computer Animation (SCA) ‘17, “Self Simulating Systems”, Los Angeles, CA, July 28, 2017
204. Keynote, Genetic and Evolutionary Computation Conference, “Adversarial Coevolution”, Berlin, Germany, July 19, 2017
205. Invited Talk, “This Six Waves of AI”, Comfama, Mofffet Field CA, June 22, 2017
206. Invited Talk, “This Six Waves of AI”, Oracle, Mountain View CA, June 20, 2017
207. Invited Talk, “Trends in Artificial Intelligence and Robotics”, Vix, Key Largo, FL, June 13, 2017
208. Invited Talk, “Trends in Artificial Intelligence and Robotics”, Googleplex, Mountain View CA, June 12, 2017
209. Keynote, GE Global Research, “Trends in Additive Manufacturing”, Niskayuna, NY, June 6 2017
210. Keynote, Earnest Young Compliance & Technology Forum, “Robotics, cognitive computing and machine learning — the fad or the future?”, New York NY, May 17, 2017
211. Invited Talk, Dyson, “Trends in Artificial Intelligence”, Pa lo Alto, CA, May 16, 2017

212. Invited Presentation, Guild 21, “Autonomous Vehicles: Will we need body shops?”, (online), May 11, 2017
213. Invited Talk, Thales, “Trends in Artificial Intelligence”, Palo Alto, CA, May 4, 2017
214. Keynote, Deming Forum, “The Six Waves of Artificial Intelligence”, Columbia Business School, New York NY, May 2, 2017
215. Invited Talk, Inter Dev Bank (IDB), “Trends in Artificial Intelligence”, Boston MA, April 22, 2017
216. Keynote, Automotive Dealer Council Meeting, “Driverless Cars and the road ahead”, Miami FL, April 21, 2017
217. Invited Talk, Singularity University IPP, “Convergence: Driverless Cars and AI”, Dan Francisco, CA March 30, 2017
218. Keynote, The Rubin Museum of Art, “AIs and Avatars”, New York, NY, March 29, 2017
219. Invited Talk, Singularity University Executive Program, “Driverless Cars and the future of the city”, Palo Alto, CA March 23, 2017
220. Invited Talk, Singularity University Executive Program, “Digital Manufacturing”, Palo Alto, CA March 21, 2017
221. Invited Talk, APS meeting, “The Robotic Scientist”, New Orleans LA, March 17, 2017
222. Keynote, Tate & Lyle Texturant, “Print and Eat – The story behind food printing”, Chicago IL, March 8, 2017
223. Invited Talk, Deutsche Telekom, “Artificial Intelligence”, Bonn, Germany, March 3, 2017
224. Keynote, Cultiv8, “Print and Eat – The story behind food printing”, Monterey, CA, March 1, 2017
225. Invited Talk, Next Era, “Trends in Artificial Intelligence”, Palm Beach FL, Feb 2, 2017
226. Invited Talk, Steelcase, “Trends in Artificial Intelligence”, Palo Alto CA, Jan 18, 2017
227. Keynote, Deloitte Executive Training, “The compounding exponentials of Artificial Intelligence”, New York NY, Jan 17, 2017
228. Keynote, Inside 3D Printing, “Additive Manufacturing – The next 25 years”, San Diego, CA, Dec 14, 2016
229. Keynote, Turkey Innovation Week, “The compounding exponentials of Artificial Intelligence”, Istanbul, Turkey, Dec 10, 2016
230. Keynote, Credit Swiss Bank, “The compounding exponentials of Artificial Intelligence”, Zurich, Switzerland, Dec 5, 2016
231. Colloquium, “Driverless cars and the road ahead”, Villanova University, Villanova, PA, Dec 2, 2016

232. Keynote, Israel Aerospace Industries, “Additive Manufacturing – The next 25 years”, Tel Aviv, Israel, Nov 24, 2016
233. Keynote, ASME ICME, “Automating Discovery in Mechanical Engineering”, Haifa, Israel, Nov 21, 2016
234. Keynote, CTO Forum Rethink Disruption, “The compounding exponentials of Artificial Intelligence”, Half Moon Bay, CA, Nov 4, 2016
235. Invited panelist, Citibank autumn dialogs, “Artificial Intelligence”, San Francisco CA, Nov 2, 2016
236. Invited Briefing, Deutsche Telekom Board of directors, “Robotics and AI”, (via skype) Oct 28, 2016
237. Keynote, Holmes Global PR Summit, “The compounding exponentials of Artificial Intelligence”, Miami, FL, Oct 26, 2016
238. Invited Talk, Leadership organization of chief executives (YPO), “Exponential Trends in Robotics”, Palo Alto, CA, Oct 24, 2016
239. Invited Presentation, The Rubin Museum of Art, “'Chasing Consciousness”, New York, NY, Oct 21, 2016
240. Invited Talk, Global Commercial Real Estate Association (SIOR), “Driverless cars and real estate”, New York, NY, Oct 21, 2016
241. Colloquium, Purdue University, Mechanical Engineering, “Automating Discovery”, West Lafayette, IN, October 20, 2016
242. Keynote, Kroger Inc. Strategic retreat, “Trends in Artificial Intelligence”, Cincinnati OH, October 5, 2016
243. Keynote, Eli Lilly Strategic retreat, “Trends in Artificial Intelligence”, Mexico City, Mexico, September 28, 2016
244. Colloquium, NYU Tandon School of Engineering, “Automating Discovery”, Brooklyn NY, September 27, 2016
245. Keynote, Harman International Strategic Management, “Robotics and Artificial Intelligence”, Montreal, Canada, September 20, 2016
246. Invited Talk, Singularity Summit, “Robotics and Artificial Intelligence”, Amsterdam, Netherlands, September 12, 2016
247. Invited Talk, RWE, “Robotics and Artificial Intelligence”, Essen, Germany, August 22, 2016
248. Invited Talk, Weber Shandwick, “Trends in AI”, New York NY, August 2, 2016
249. Invited Talk, Google NY, “Automatic Scientific Discovery”, New York NY, August 1 2016

250. Panel, Northeast ME Chairs meeting, “Makerspaces in ME Education”, University of Pennsylvania Mechanical Engineering Dept., Philadelphia, PA, July 29, 2016
251. Invited Talk, “Exponential trends in Robotics”, Hershey, PA, June 28 2016
252. Invited Talk, “Exponential trends in Artificial Intelligence”, AXA, New York NY, June 14 2016
253. Invited Talk, “Can a robot turn a canvas into a masterpiece?”, Google Conference on Computer Generated Art, San Francisco CA, June 1, 2016
254. Invited Talk, “Trends in Additive Manufacturing”, US Air Force Research Lab (AFRL), Dayton OH, May 26 2016
255. Panel, “Self-awareness”, NY Academy of Sciences, New York NY May 23, 2016
256. Colloquium, “Trends in Additive Manufacturing”, ETH Zurich, Zurich Switzerland, May 17, 2016
257. Keynote, “Robotics in Manufacturing”, Singularity University Exponential Manufacturing, Boston MA, May 10, 2016
258. Colloquium, “Automating Discovery: The robot Scientist”, Stanford University Biomedical Engineering Department, Palo Alto CA, May 9, 2016
259. Colloquium, “Automating Discovery: The robot Scientist”, TCNJ, College of Engineering, April 20, 2016
260. Plenary, “Can a robot turn a canvas into a masterpiece?”, MIT Conference on Computational Fabrication, Boston MA, April 19, 2016
261. Invited Talk, “Robotics and AI”, NexGen, Hong Kong, China April 13, 2016
262. Keynote, “Trends in 3D Printing”, Stratasys event, Denver CO, April 1, 2016
263. Invited Talk, “Trends in Robotics”, Dutch Royal Airforce retreat, Rotterdam Netherlands, March 31, 2016
264. Colloquium, “Automating Discovery: The robot Scientist”, University of Texas Southwestern Medical Center, Dallas TX, March 18, 2016
265. Invited Talk, “Exponential Trends in AI”, Procter & Gamble, Cincinnati OH, March 2, 2016
266. Invited Talk, “Exponential Trends in Robotics”, Walmart Corp, March 1, 2016
267. Keynote, “Trends in Artificial Intelligence”, Tec De Monterrey, Mexico City, Mexico, December 3, 2015
268. Invited Talk, “Exponential Trends in Robotics”, Singularity University, Johannesburg, South Africa, Nov 17, 2015
269. Plenary, “Creative Machines”, MIT Technology Review Annual Conference, Boston MA, November 3, 2015

270. Keynote, “Food Printing”, Food Vision USA, Chicago IL, October 29, 2015
271. Invited Talk, “The future of 3D Printing”, Makerbot Industries, Brooklyn NY, Oct 27, 2015
272. Invited Talk, “Robotics and AI”, Singularity University, Moffet Field CA, Oct 19, 2015
273. Colloquium, “Automating Discovery”, University of Rochester, Computer Science Department, Rochester NY, October 14, 2015
274. Keynote, “Additive Manufacturing for Long Term Care”, OnLok Sustainable Long Term Care Conference, UCSF, October 8, 2015
275. Invited Seminar, “AI And Robotics”, Naspers Media Retreat, San Francisco, CA, Septermber 3, 2015
276. Keynote, “3D Printing - The next 25 Years”, Stratasys User Forum, Seoul, Korea, Aug 28, 2015
277. Keynote, “3D Printing - The next 25 Years”, Stratasys User Forum, Tokyo Japan, Aug 27, 2015
278. Keynote, “3D Printing - The next 25 Years”, Stratasys User Forum, Shanghai China, Aug 25, 2015
279. Invited Talk, “3D Printing - The next 25 Years”, USG/CENTRA, Washington DC, Aug 19, 2015
280. Keynote, “3D Printing - The next 25 Years”, ASME AM3D, Boston MA, Aug 3, 2015
281. Invited Talk, “Print and Eat - Challenges and Opportunities in Food Printing”, Florida Academy of Nutrition and Dietetics, Orlando FL, July 15, 2015
282. Keynote, “3D Printing - The next 25 Years”, Select Bio, Boston MA, June 8, 2015
283. Keynote, “3D Printing - The next 25 Years”, Potter County School District, June 17, 2015
284. Keynote, “3D Printing - The next 25 Years”, Nikkei Global ICT Summit, Tokyo Japan, June 9, 2015
285. Invited Talk, “Self-Aware Systems”, Northrop Grumman, Los Angeles, June 3, 2015
286. Invited Talk, “The Future of Robotics and AI”, Barclays Bank retreat, Johannesburg, May 27, 2015
287. Keynote Speaker, “Automated Modeling of Dynamical Systems”, SIAM Conference on Applications of Dynamical Systems, Snowbird, UT, May 21, 2015
288. Invited Talk, “The Future of Robotics and AI”, Caterpillar Retreat, Peoria IL, May 20, 2015
289. Keynote, “3D Printing - The next 25 Years”, BBC Executive Forum, New York, NY May 7, 2015
290. Invited Talk, “Print and Eat - Challenges and Opportunities in Food Printing”, General Mills Inc., Minneapolis, MN, May 5, 2015

291. Keynote, “3D Printing- The next 25 Years”, Materialse Annual User Forum, Brussels, Belgium, April 23, 2015
292. Keynote, “3D Printing- The next 25 Years”, Shenzhen Innovation Fair, Shenzhen, China, April 19, 2015
293. Invited Talk, “3D Printing- The next 25 Years”, The DOW Chemical Company, Houston Tx,, April 7, 2015
294. Colloquium Speaker, “Sentient Robotics”, Georgia Tech Robotics Institute, Atlanta GA, March 4, 2015
295. Keynote Speaker, “The Next 25 Years of 3D Printing”, Tissue Engineering & Bioprinting: Research to Commercialization Conference, Boston, MA, Feb 9-10, 2015,
296. Colloquium Speaker, “The Next 25 Years of 3D Printing”, Clarkson University, Mechanical Engineering Sept, Potsdam NY, Feb 6, 2015
297. Invited Speaker, “Sentient Robotics”, Baidu BIG Talk, San Francisco CA, Jan 30, 2015
298. Keynote Speaker, “3D printing materials”, Welding, Joining and Additive Manufacturing International Conference (WJAM), Tel Aviv, Israel, January 18-20, 2015
299. Invited Speaker, “Print and Eat: The future of Food printing”, Food Systems Global Summit, Cornell University, Dec 8, 2014
300. Invited Speaker, “The Future of 3D Printing”, 3M, St. Paul MN, Nov 7 2014
301. Keynote Speaker, “3D printing materials”, New Horizons in 3D Printing and Digital and Additive Manufacturing, Stony Brook, Long Island, NY, Sep 30, 2014
302. Invited Speaker “The Robot Scientist”, Annual meeting of the NAE, Mechanical Engineering Section, Washington DC, September 29, 2014
303. Colloquium Speaker, “Automated discovery”, Princeton University ME Dept, Princeton NJ, Sep 19, 2014
304. Keynote Speaker, “The Future of 3D Printing”, DoD workshop on Multifunctional Materials, Arlington VA, Aug 18, 2014
305. Keynote Speaker, “The next 225 Years of 3D Printing”, Solid Freeform fabrication (SFF) 14, Austin TX, Aug 5, 2014
306. Invited Plenary Speaker, “The Robotic Scientist”, Unconventional Computation & Natural Computation (UCNC) 2014, London ON, Canada, July 15, 2014
307. Invited Speaker, “3D printing materials”, Wyss Symposium: Adaptive Bioinspired Materials, Boston MA, June 27, 2014
308. Plenary Beacon Lecturer, “Food Printing”, Institute of Food Technologists (IFT) Annual Meeting, New Orleans, LA June 23, 2014

309. Invited speaker, “Printing electronics”, Futurapolis, May 17, Toulouse France
310. Invited Speaker, “The Future of 3D Printing”, Science and Engineering Festival, Washington DC, April 24, 2014
311. Invited Speaker, “3D Printing: The promise and Peril”, James Madison University, Harrisonburg VA, April 24, 2014
312. Invited Speaker, “3D printing in Nanotechnology”, Nano 2014, Tel Aviv, Israel, March 25, 2014
313. Colloquium Speaker, “Food printing”, Hebrew University, Food Science Dept, Israel, March 23, 2014
314. Keynote Speaker, “The future of 3D printing in Education”, Society for Information Technology and Teacher Education (SITE), Jacksonville, FL March 18, 2014
315. Annual Winegard Visiting Lecturer, “The future of 3D printing: Principles and technologies”, University of Guelph, March 13, 2014, Guelph ON, Canada
316. Invited Speaker, “Additive Manufacturing as a Transformative Manufacturing Technology”, 2014 AAAS Annual Meeting, Chicago IL, Feb 13-17, 2014
317. Colloquium Speaker, “Additive Manufacturing as a Transformative Manufacturing Technology”, Carnegie Mellon University Robotics Institute, Pittsburg PA, Nov 22, 2013
318. Congress Wide Plenary, “The future of 3D printing”, ASME 2013 Mechanical Engineering Congress & Exposition, San Diego, California, November 15-21, 2013
319. 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.
320. Keynote, “The future of 3D printing: Principles and technologies”, Juniata College, Nov 6, 2013, Huntingdon, PA
321. Invited Speaker, “The future of 3D printing: Principles and technologies”, BP Headquarters, Oct 30, 2013, Houston TX
322. 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
323. 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
324. Keynote Speaker, “The future of 3D printing: The promise and peril of a machine that cam make (almost) anything”, Toulouse, France, Oct 12, 2013

325. Invited Speaker, “Automating Scientific Discovery: Distilling Natural Laws from Experimental Data, from Robotics to Material Science”, AIRBUS, Toulouse, France, Oct 11, 2013
326. Colloquium speaker, “The future of 3D Printing”, Columbia School of Architecture and Design, September 27, 2013.
327. Colloquium speaker, “Automating Discovery”, Columbia Mechanical Engineering Department, September 27, 2013.
328. Keynote, “The future of 3D printing”, Maker Faire, Toronto ON, Canada, Sep 21, 2013
329. Colloquium, “The future of 3D Printing”, Mechanical Engineering Department, Northwestern Polytechnical University, Xi’an, China, June 28, 2013
330. 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
331. Invited Speaker, “The future of 3D Printing”, American Chamber of Commerce-China, Beijing, June 25, 2013
332. Keynote Speaker, “Digital Fashion”, 1st International Conference on Digital Fashion, London College of Fashion, London, UK, May 16 – 17, 2013.
333. Invited Speaker, National Academy of Sciences’ Committee on Science, Technology, and Law (CSTL), Washington, DC, May 13, 2013.
334. Invited Colloquium, “Scientific Data Mining”, Complex Systems, University of Alaska Anchorage, Feb 15, 2013
335. Invited Colloquium, “Scientific Data Mining”, Complex Systems, SUNY Binghamton, Binghamton NY, Feb 11, 2013
336. Invited Colloquium, “Accelerating Discovery”, Electrical Engineering Department, Technion - Israel Institute of Technology, Haifa, Israel, Dec 12, 2012
337. Invited Review Lecturer, Israel Physical Society Conference, “Accelerating Discovery”, Hebrew University, Jerusalem, Israel, Dec 9, 2012
338. Invited Speaker, “Jamming Matter for robotics applications”, US-Israel Emerging Technology Discussions, Boson MA, Nov 28, 2012
339. Invited Speaker, “Matter Compilers”, DMC 2012, Orlando FL, Nov 26, 2012
340. Invited Speaker, “The Future of 3D Printing”, NEXT: The Event for Technology, Manufacturing & Innovation, Syracuse, November 8, 2012.
341. Invited Speaker, “Citizen Science ", AAAI Fall meeting, Washington DC, Nov 2, 2012
342. Invited Speaker, “Jamming Robotics ", U of Chicago, Oct 28, 2012

343. Invited Colloquium, “Scientific Data Mining”, Stockholm University, Sweden, Oct 9, 2012
344. Invited Colloquium, “Scientific Data Mining”, EPFL, Lausanne Switzerland, Oct 8, 2012
345. Invited Speaker, “The Robotic Scientist", Northwestern, Chicago IL. Oct 1, 2012
346. Plenary Gilberth Speaker, “Programmable Matter—The Shape of Things to Come", National Academy of Engineering, Washington DC, Sep 30, 2012
347. keynote Speaker, “Digital Matter", Betascape 2012, Sep 22, 2012
348. Invited Colloquium, “Scientific Data Mining”, Harvard University Applied Physics Dept, Boston MA, Sep 21, 2012
349. Invited Colloquium, “Scientific Data Mining”, Harvard University Systems Biology Dept, Boston MA, Sep 20, 2012
350. Invited Speaker, “Self Reflecting Robotics", Annual Academy of Management meeting, Boston MA, Aug 4, 2012
351. Invited Speaker, “Evolutionary Robotics", Institute for Advanced Studies summer school in Theoretical Physics, Princeton NJ, July 19, 2012
352. Invited Speaker, “Digital Matter", Singularity University 2012, San Jose CA, Jun 26, 2012
353. Invited Speaker, “The new world of 3D printing", IdeaCity 2012, Toronto ON, Jun 13, 2012
354. Invited Speaker, “The Robotic Scientist", Stanford SLAC, Palo Alto CA. June 4, 2012
355. Invited Speaker, “Design in the age of 3D printing", Architectural Design Symposiyum, London UK, May 11, 2012
356. Invited Speaker, “Biologically Inspired Robotics", USA Science & Engineering Festival (USASEF), Washington DC, April 27, 2012
357. Invited Speaker, “Design in the age of 3D printing", Design for Manufacturing Forum, Brooklyn NY, April 26, 2012
358. Invited Speaker, “Eureqa!", Microsoft Think Next, Tel Aviv, Israel, April 22, 2012
359. Invited Speaker, “Matter Compilers – Design in the age of 3D printing", Congress on the future of Engineering Software (COFES), Scottsdale AZ, April 13, 2012
360. Invited Symposium X Speaker, “Programmable Matter—The Shape of Things to Come", MRS Annual meeting, San Francisco CA, April 12, 2012
361. Seminar Speaker, “The Robotic Scientist", Caltech Astronomy Dept, Pasadena CA. April 11, 2012
362. Colloquium Speaker, “Automating Scientific Discovery", Brandeis University CS Dept, Waltham MA, April 5, 2012
363. Invited Speaker, “Automating Scientific Discovery", Signal processing and inference for the physical sciences, Royal Society, London UK, March 26, 2012

364. Invited Speaker, “Symbolic Data Mining", NECSI, Cambridge MA, Feb 17, 2012
365. Invited Speaker, “Bioinspired Robotics", Forum Informatik, Aachen, Germany, Jan 23, 2012
366. Invited Speaker, “My Robot is Smarter Than Yours: Cognitive Robotics and AI", Swissnex, San Francisco CA, January 19, 2012
367. Colloquium Speaker, “Programmable Matter", Rochester Inst. Of Technology, Rochester NY, Oct 26, 2011
368. Colloquium Speaker, “Machine Science", Princeton Plasma Physics Laboratory, Princeton NJ, Oct 25, 2011
369. Invited Speaker, “Data mining biological Systems", New Frontiers in Systems Biology, Rehovoth, Israel, Oct 3, 2011
370. Invited Speaker, “Frontiers in Additive Manufacturing", NAE US Frontiers of Engineering, Palo Alto, CA, September 19, 2011
371. Invited Speaker, “Programmable Matter", Perimeter Institute, Hawking wing opening ceremony, Waterloo ON, September 18, 2011
372. Invited Speaker, “Fab@Home", Maker Fair, Queens, NY, September 17, 2011
373. Colloquium Speaker, “Machine Science", Vanderbilt University, Nashville TN, Sep 8, 2011
374. Invited Speaker, “Machine Science", Acceleration Discovery: Human Computer Symbiosis 50 Years On, Park City, UT, July 25, 2011
375. Invited Speaker, "Reverse Engineering Stochastic Systems", Uncertainty in Artificial Intelligence (UAI11), Barcelona, Spain, July 16, 2011
376. Invited Plenary, “Reverse Engineering Dynamical Systems", International Conference on Complex Systems (ICCS 2011), Cambridge MA, June 27, 2011
377. Keynote Speaker, “Analysis by Synthesis", 2011 IEEE Congress on Evolutionary Computation (CEC 2011), New Orleans, LA, June 9, 2011
378. Invited Speaker, “Bioinspired Robotics", World Science Fest (WSF11), New York NY, June 4, 2011
379. Invited Plenary, “Soft Robotics", European Commission Future and Emerging Technologies (FET11), Budapest Hungary, May 5, 2011
380. Invited Panelist, “3D Printing Technologies", 3D/DC, Washington DC, April 28, 2011
381. Colloquium Speaker, "The Robotic Scientist", Union College CS Dept., Schenectady NY, April 21, 2011
382. Colloquium Speaker, "Reverse Engineering Dynamical Systems", University of Chicago Computation Institute, Chicago IL, March 7, 2011

383. Keynote Speaker, “Self Reflective Systems", Int. Workshop on Self Organizing Systems, Karlsruhe, Germany, February 24, 2011

384. Invited Speaker, “Bioprinting", American Association for the Advancement of Science (AAAS11), February 21, 2011

385. Invited Speaker, “Self Reflective Robotics", American Association for the Advancement of Science (AAAS11), February 19, 2011

386. Invited Speaker, “The Limits of Science”, Science on Saturday Lecture Series, Princeton Plasma Physics Laboratory, January 29, 2011

387. Colloquium Speaker, “Self Reflective Machines", Psychology Dept., Indiana University, Bloomington IN, January 24, 2011

388. Colloquium Speaker, “Distilling Natural Laws from Experimental Data", Physics Dept., Weizmann Inst, of Science, Rehovoth, Israel, Dec 30, 2010

389. Colloquium Speaker, “Digital Materials", Pixel Club, Computer Science Dept., Technion - Israel Inst. of Technology, Haifa Israel, Dec 28, 2010

390. Invited Seminar, "Reverse Engineering Dynamical Systems", Los Alamos National Labs, Albuquerque NM, Dec 8, 2010

391. Keynote Speaker, “Mining Dynamical Systems - From Cognitive Robotics to Computational Biology”, European Conference on Machine Learning (ECML 2010), Barcelona, Spain, September 22, 2010

392. Invited Speaker, “Automating Science”, Philosophical Society of Washington, Washington DC, September 10, 2010.

393. Colloquium Speaker, “Analysis by Synthesis", Computer Science Dept, École Polytechnique Fédérale de Lausanne (EPFL) , Lausanne, Switzerland, September 5, 2010

394. Keynote Speaker, “Analysis by Synthesis", 9th International Conference on Evolvable Systems (ICES 2010), York, UK, September 6, 2010

395. Plenary Speaker, “Soft Evolutionary Robotics”, 12th International Conference on the Synthesis and Simulation of Living Systems (ALIFE XII), Odense, Denmark, August 20, 2010

396. Invited Speaker, “Rapid Assemblers”, Fab6, Amsterdam, Netherland, August 18, 2010

397. Invited speaker, “Automating Scientific Discovery”, Princeton Institute for Advanced Studies, Princeton NJ, 15 April 2010

398. Invited speaker and panelist, “Self Reflective Architecture”, Columbia Graduate School of Architecture, New York NY, 12 April 2010

399. Invited Speaker, “3D Printing for biological applications,” in Biofabrication: Biomedical Application of Rapid Prototyping, University of South Carolina, Charleston SC, March 19, 2010

400. Keynote Speaker, “The Robotic Scientist” IEEE Aerospace Conference, Big Sky MT, March 8, 2010

401. Colloquium Speaker, “A factory in your classroom”, University of Virginia School of Education "Tea and Technology" seminar Series, Charlottesville VA, March 4, 2010

402. Invited Plenary Speaker, “The Robotic Scientist”, Simposium Internacional de Sistemas Computacionales y Tecnologías de Información (SISCTI ’10), Monterrey, Mexico, February 26, 2010

403. Invited Speaker, “The robotic Scientist”, The Perimeter Institute, Waterloo ON, Canada, February 3, 2010

404. Invited Plenary Speaker, “Automated Design and Control of experiments”, 16th Lab Automation Conf., Palm Springs CA, January 25, 2010

405. Invited Speaker, “The robotic Scientist”, Foresight Institute, Palo Alto, CA, January 16, 2010

406. Invited keynote speaker, “A factory in your classroom”, National Tech Leadership Summit, Punahou School, Honolulu HI, January 7-8, 2010

407. Colloquium Speaker, “Self-reflective Systems”, Harvard Graduate School of Architecture, Cambridge MA, November 12, 2009

408. Invited Speaker, “Robot Evolution”, Quantum to Cosmos Festival, The Perimeter Institute, Waterloo ON, Canada, October 22, 2009

409. Invited Keynote Speaker, “Reverse Engineering Dynamical Systems”, Fourteenth Portuguese Conference on Artificial Intelligence, EPIA 2009, Aveiro, Portugal, October 12, 2009

410. 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

411. Invited Colloquium, “Self-reflective and self-fabricating robotic systems”, Robotics Institute, Tufts University, Boston MA, September 24, 2009

412. Invited Keynote Speaker, “Self-reflective Systems”, EuropeanConferebce on Artificial Life (ECAL 2009), Budapest, Hungary, September 14, 2009

413. Invited talk, “Self-reflective machines”, Idea City ‘09, Toronto, Canada, June 18, 2009

414. Invited talk, “Bioinspired Robotics”, Emerging Technologies Pavilion, International Robots, Vision & Motion Control exhibition, June 10, Chicago IL, 2009

415. 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

416. Invited Seminar, “3D Printing for Tissue Engineering Applications”, South Carolina bioengineering symposium, Columbia SC, April 14, 2009

417. Invited speaker, The Goldstein Lecture Series, “Self-Reflection and Self-Fabrication in robotic systems”, Technion, Israel Institute of Technology, Haifa, Israel, March 25, 2009

418. Invited Seminar, “Self-Reflection and Self-Fabrication in robotic systems”, Ben Gurion University, Be’er Sheva, Israel, March 24, 2009

419. Invited Seminar, “Robotic self-reflection and self-assembly”, Robotics Institute, Carnegie Mellon University, Pittsburg PA, February 6, 2009

420. Invited Beckman Series Speaker, “Mining experimental data for dynamical invariants, from cognitive robotics to computational biology”, Caltech, Pasadena CA, Nov 20, 2008

421. Invited Colloquium, “Mining experimental data for dynamical invariants, from cognitive robotics to computational biology” Department of Computer Science, Austin TX, Nov 7, 2008

422. Invited Colloquium, “Evolutionary Robotics” Computer Science Dept, Wells College, Aurora NY, October 31, 2008

423. 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

424. Invited Colloquium, “Mining freeform naturals laws in dynamical data” Department of Biological Statistics and Computational Biology, Cornell University, October 1, 2008

425. Invited Colloquium, “Mining freeform naturals laws in dynamical data” Department of Biological Statistics and Computational Biology, Cornell University, October 1, 2008

426. Invited SHARP Seminar Speaker, “What do robots dream of? On cognitive machines and other self-modeling systems”, NYU, NY, Sep 24, 2008

427. 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

428. Invited talk, Foundation of Nanoscience 2008, "Dynamically reprogrammable self-assembly at macro and micro scales", Snowbird, Utah, April 2008

429. Invited Colloquium, Santa Fe Institute, "Mining experimental data for physical laws", Santa Fe, NM, March 2008

430. Invited talk, “The future of personal fabrication”, University of Pennsylvania Wharton School of management, Philadelphia PA, January 2008
431. Invited talk, NSF Engineering Research and Innovation Annual Meeting, Top advances and Emerging Areas, “Resilient machines”, January 2008, Knoxville TN
432. Invited talk and panel, NSF Engineering Research and Innovation Annual Meeting, “Working with the Media”, January 2008, Knoxville TN
433. Invited presentation, Light in Winter 2008, “What do robots Dream of”, January 2008, Ithaca NY
434. Colloquium Speaker, Chicago University, Physics Dept, “Cognitive Robotics and other self-modeling systems”, December 2007
435. Colloquium Speaker, Delaware University Biomechanics Dept Colloquium, “Biologically inspired robotics”, November 2007
436. Invited Plenary Address, “Emergent Self Models in Machines”, Epigenetic Robotics 2007, November 2007, Rutgers NJ
437. Colloquium Speaker, Cornell University Cognitive Science Colloquium., “Biologically inspired robotics”, October 2007
438. Invited seminar, “Biologically inspired robotics”, Free University of Brussels CS Dept., Brussels, Belgium, Sep 2007
439. Invited seminar, “Emergent Self Models in Machines”, University of Malaga CS Dept., Malaga, Spain, Sep 2007
440. I Invited Speaker, “Multimaterial Freeform Fabrication”, Symposium on Digital Fabrication, MIT, Cambridge MA, May 2007
441. Invited Plenary Address, “Emergent Self Models in Machines”, Annual meeting of The Human Behavior and Evolution Society, May 2007, Williamsburg, Virginia
442. Colloquium Speaker, Carnegie Mellon University, Mechanical Engineering Dept., “Biologically inspired robotics”, February 2007
443. Invited 4-lecture series, “Evolutionary Robotics”, Spring school on cognitive science and artificial intelligence, Günne at Lake Möhne, Germany, March 2007
444. Invited plenary speaker, “Robotics Innovations”, TED / Technology & Design, Monterey, CA, March 2007
445. Invited Speaker, “Machine Minds”, International Symposium on Creating Brain-Like Intelligence, Honda Research Institute Europe, Hohenstein, Germany, February 2007
446. Invited talk, “Reverse engineering biological networks”, Computational & Theoretical Biology Symposium, Rice University, December 2006

447. Colloquium, “Biologically Inspired Robotics”, Computer Science Dept, Harvard University, November 2006

448. Invited speaker, “Biologically Inspired Robotics”, Evolving Life Life Evolving, Namur, Belgium, December 2006

449. Colloquium Speaker, “Biologically Inspired Robotics”, Mechanical & Aerospace Engineering Dept, Vanderbilt University, October 2006

450. Invited Colloquium Speaker, “Emergent Self-models in Machine Minds”, Sage Center, University of California at Santa Barbara, October 2006

451. Invited Keynote Speaker, “Evolutionary Robotics”, Dana-Farber Cancer Institute Annual retreat, Boston, October 2006.

452. Invited Speaker, “Multimaterial Freeform Fabrication”, Symposium on Digital Fabrication, Pretoria, South Africa, June 2006

453. Invited Speaker, “Evolutionary Robotics and Evolutionary Design “, 50th Anniversary Summit of Artificial Intelligence, Monte Verita, Switzerland, July 2006

454. Invited Keynote Speaker, “Biologically Inspired Robotics”, Robocup 2006, Bremen, Germany, June 2006

455. Invited Keynote Speaker, “Co-evolutionary Learning in Embodied Cognitive Agents”, Artificial Life X, Bloomington, Indiana, USA June 2006

456. Invited Keynote Speaker, “Co-evolutionary embedded systems”, The 9th International Conference on Intelligent Autonomous Systems (IAS-9), Tokyo Japan, March 2006

457. Invited Speaker and Panelist, “Automating Discovery”, W.M.Keck Institute Roundtable on future directions in science, Los Angeles CA, May 2006

458. Colloquium Speaker, “Biologically Inspired Robotics: From evolving to Self-Replicating Machines”, College of Engineering, University of Vermont, April 2006

459. Colloquium Speaker, “Automating Discovery”, Department of Pharmacology, University of Texas, Feb 2006

460. Special Seminar Speaker, “Biologically Inspired Robotics: From evolving to Self-Replicating Machines”, Mechanical Engineering Department, Indian Institute of Technology (IIT) Kanpur, January 2006

461. Invited Presenter and Panelist, “Science & Technology Revolutions”, Renaissance Weekend, Charleston SC, Dec 2005

462. Invited Plenary Keynote Speaker, “Print Anything: The future of rapid prototyping”, Annual retreat, Lexmark Inc., Lexington, KY, Nov 2005

463. Invited Colloquium, “Co-evolutionary Methods in System Design and Analysis”, Exxon-Mobile Upstream Research Company, Huston TX, Nov 2005

464. Invited Colloquium, “Evolving Engineering Systems”, Rockefeller University, New York NY, Nov 2005

465. Invited Speaker, “3D Printing Functional Systems”, Symposium on Digital Fabrication, Tromso, Norway, August, 2005

466. Invited Plenary Speaker, “Evolving Engineering Systems”, Int. Conference of Systems Biology, Boston MA, October 2005

467. Invited Plenary Speaker, “Biologically Inspired Robotics”, Robotics festival and exhibition, Venice, Italy, July 2005

468. Invited Speaker, DARPA/ISAT workshop "Beyond Video", Institute for Defense Analyses, Alexandria VA, June 2005

469. Invited speaker, Microsoft Faculty Summit, “3D Tablet Application”, Redmond WA, June 2005

470. Invited Speaker, “Coevolutionary methods in Locomotion”, Locomotion Workshop, Robotics Science and Systems, MIT, June 2005

471. Invited Speaker, “Stochastically reconfiguring systems”, Modular robotics Workshop, Robotics Science and Systems, MIT, June 2005

472. Invited Colloquium Speaker, “Biology and Machines”, Physics Dept, Technion – Israel Institute of Technology, December, 2004

473. Invited Lecturer, “Computational Evolution” (Three lectures series), Winter school in theoretical physics, Hebrew University of Jerusalem, December, 2004

474. Invited colloquium speaker, “Evolved Engineering Systems”, Dept. of Ecology and Evolutionary Biology, Michigan State University, October, 2004

475. Invited Seminar, “Co-evolution for model inference”, Seminar Series in Bioinformatics, Weisman Inst of Science, October, 2004

476. Invited Speaker, DARPA-sponsored workshop on Parallel Assembly, Lansdowne, VA, June 2004

477. Invited speaker, “Innovation in evolutionary processes”, In Search of Innovation – A Complex Adaptive Systems Perspective, Stanta Fe, NM, June, 2004

478. Invited Colloquium Speaker, “Modularity, Regularity and Hierarchy in Evolved Systems”, Dept. of Ecology and Evolutionary Biology, Cornell University, March 29, 2004

479. Invited speaker, Founders workshop, “Innovation in evolutionary processes”, Santa Fe Institute for Complex Systems, StantaFe, NM, USA, Jan 15 2004

480. Invited plenary speaker, Meeting of the National Academies, “Modularity, Regularity and Hierarchy in Evolved Engineering Systems”, Irvine, CA, USA, Nov 15 2003
481. Invited speaker, Microsoft Faculty Summit, “3D Ink”, Redmond WA, June 28, 2003
482. Invited speaker, “Design Automation for Complex Systems”, Advanced Systems Office of the NASA Office of Space Flight, NASA JPL, Jan 14, 2003
483. Invited speaker, Mechanical Engineering Colloquium series, California Institute of Technology, May 7, 2002
484. Invited plenary speaker, NASA Workshop on Revolutionary Aerospace Systems Concepts For Human/Robotic Exploration Of The Solar System, Hampton VA, November 2001
485. Invited speaker, Workshop on Nanophysics and Bio-Electronics, Dresden, Aug 20-24, 2001
486. Invited speaker, “Evolutionary Design”, Boston University, May 2001
487. Invited speaker, “Evolutionary Design”, Cornell University, May 2001
488. Invited speaker, “Evolutionary Design”, University of Illinois at Urbana Champain, Apr 2001
489. Invited speaker, “Evolutionary Design”, University of Washington, Apr 2001
490. Invited speaker, “Evolutionary Design”, Stanford University, Apr 2001
491. Invited speaker, “Evolutionary Design”, UC Berkeley, Berkeley, CA, March 2001
492. Invited speaker, “Evolutionary Design”, MIT, Cambridge, MA, Feb 2001
493. Invited speaker, “Evolutionary Design”, Harvard University, Cambridge, MA, Feb 2001
494. Invited speaker, “Evolutionary Design”, Rice University, Austin, TX, Jan 2001
495. Invited speaker, “Evolutionary Design”, Tufts University, Medford, MA, Jan 2001
496. Invited speaker, “Evolutionary Design”, Northwestern University, Chicago IL, Jan 2001
497. Invited Colloquium, “Evolutionary Design”, Dartmouth College - Hanover, NH, Jan 2001
498. Invited plenary speaker, (“New and Notable”) Annual Biophysical Society meeting, February 20, 2001, Boston, MA, USA
499. Invited Talk, “Evolutionary Robotics”, IEEE Robotics and Automation, Boston Chapter, 2001
500. Invited Speaker, International Firefighting robot competition, Trinity College, Hartford, CT, 2001
501. Plenary speaker, Volen Center for Complex Systems Annual Retreat, February 21, 2001, Woods Hole, MA, USA
502. Colloquium Speaker, “Automated Design and Fabrication of Robotic Lifeforms”, Mechanical Engineering Department, Technion, Israel, Jan 2001

503. Invited talk, “Evolutionary Design”, EXPO’2000 Shaping the future, Hannover, Germany, Aug 1-3, 2000
504. Plenary talk, “Automated Design Concepts, Methods, and Algorithms”, CIRP Design Seminar, Haifa Israel, May 16, 2000
505. Invited talk, “High order Neurons”, Workshop on Hybrid Neural Systems, NIPS 98, Brekenridge, 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, (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 (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 242-26, 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. **Editorial Board, *Science Robotics* (2020-**)
2. **Editor-in-Chief (2013-2015):** 3D Printing and Additive Manufacturing (3DP), Mary Ann Liebert Publishing
3. **Program Committees**: Artificial Intelligence in Design (AID), Artificial Life (ALIFE), Genetic and Evolutionary Computation (GECCO), Solid Modeling (SM), Frontiers in Evolutionary Algorithms (FEA)
4. **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. Lipson H., Benjamin D., "Generative AI for architectural planning", $80K, 8/2023-8/2024
2. Lipson H., Benjamin D., "Generative AI for 3D CAD", $80K, 8/2023-8/2024
3. Lipson H., Billinge S, "Deep Generative Crystallography", $160K, DSI/SIRS, 3/2023-2/2024
4. Kutz N, Brunton S, Lipson H., Na L, Manohar K, "NSF Institute for Artificial intelligence on Dynamical Systems", NSF, $20M, 1/2022-12/2027
5. Lipson H., (PI) "Modeling 3D Printed Meat surrogates", Redefine Meat Inc, $115,000, 1/2022-12/2022
6. Lipson H., (PI) "3D Food Printing", Journey Foods, $115,000, 1/2022-12/2022
7. Lipson H., (PI) "Self-Modeling Systems", DARPA, $470K, 4/2021-6/2022
8. Lipson H., (PI) “Multifunctional, Robotically Reconfigurable System for Structural Support”, NASA NSTRF, $144K
9. Lipson H., (PI) " I-Corps: A hand-held device that generates 2D and 3D ultrasound sonograms", NSF I-Corps, $50K, 3/2021-9/2021
10. Lipson H. (PI) “Open Source Ultrasound – Phase II”, Eric Schmidt Foundation, $350K, 6/19-6/21
11. Vondrick C, Lipson H., (co-PI) “Learning Visual Dynamics from Interaction”, NSF, $750K, 10/19-9/22
12. Lipson H. (PI) “Open Source Ultrasound – Phase I”, Eric Schmidt Foundation, $106K, 6/18-6/19
13. Lipson H. (PI) "Soft Actuators for Soft Robotics", IMOD, 2016-2019, $370,000
14. Lipson H., (PI) "Auto-generative Networks", DARPA, 1/2018-12/2019, $816K
15. Chattopadhyay, I (PI) , Lipson H. (co-PI), "ZeD: Zero information modeling", DARPA, 3/2017-2/2021, $400K, Lipson portion $125K
16. Lipson H. (PI), "Simultaneous Optimization and Simulation", DARPA, 1/2017-12/2020, $989K
17. Lipson H., Grinspun E "Food Printing", SEAS SIRS, 2017-2018, $160,000, Lipson Portion $80K
18. Lipson H., "Voxel Advanced Digital-manufacturing for Earth and Regolith in Space ", NASA, 4/2016-7/2016, $18K

19. Lipson H. (2016) "Self-Aware machines", Northrop Grumman Corporation 2016-2017, $85,000
20. 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
21. Lipson H., (2015) "Text To Food: Exploration In 3D Food Printing", University of Chicago, 5/2014-4/2015, $10,000
22. Lipson H., Labutov I. (2014) "Automatic curriculum generation from prerequisite concept networks", Metaknowledge Network, 2014-2015, $108,882
23. Lipson H. (2013) "Simulator 3D printing electrometrical systems", IMOD, 2015-2016, $125,000
24. Lipson H. (2014) "Matter Compilers", DARPA Open Manufacturing, 2014-2015, $100,000
25. 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
26. Lipson H. (2013) "3D printing electrometrical systems", IMOD, 2013-2014, $150,000
27. Lipson H. (2012) "Inverse Gillespie Algorithm", ARO, 2012-2014, $300,000
28. Lipson H. (2012) "Matter Compilers", DARPA Open Manufacturing, 2012-2014, $400,000
29. Lipson H. (2011) "Rapid Assemblers", DARPA M3 2011-2014, $430,000
30. Bull G., French J., Berry R., Lipson H. (2010) "The FabLab classroom: Preparing Students for the Next Industrial Revolution", NSF 2010-2013, $250,000
31. Bull G., Berry R., Lipson H. (2010) "Fab@School – A Digital Fabrication Laboratory for the Classroom", Motorola Foundation Innovation Generation, $250,000, 2010-2011
32. Bull G., Berry R., Lipson H. (2010) "Fab@School – A Digital Fabrication Laboratory for the Classroom", MacArthur Reimagining Learning Competition, $185,000, 2010-2011
33. McLean J., Wkiswo J., Lipson H., (2009) “Elucidation of Leukocyte and Macrophage Biomarker Signature from Drugs of Abuse”, NIH, $2,700,000, 2009-2011
34. Lipson H., Suel G., (2009) “Distilling natural laws from experimental data”, NSF, $600,000, 2009-2012
35. Wikswo 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
36. 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.

37. Lipson H., Erickson D., Jaeger H., (2008), “Hierarchical programmable self-assembly”, DARPA MTO, $2,500,000, 2008-2011.
38. Hornby G., Lipson H., Pollack J.B., (2008), “Co-evolution of designers and critics”, NSF Creative IT, $800,000, 2008-2011.
39. Rus D., Lipson H., Yim M., Klavins E., (2007), “The reconfigurable Factory”, NSF EFRI, $2,000,000, 2007-2011.
40. Bonassar L., Butcher J, Lipson H (2007) “Multidisciplinary Approach for Engineered Heart Valves Using Novel Biomaterials,” Morgan Tissue Engineering, $96,000 2007-2008
41. Bonassar L, Garcia E, Lipson H (2007) “Engineering Biological Interfaces Towards Enhanced Prosthetic Integration,” AFOSR, $205,469, 2006-2008
42. Lipson H. (2007) “A Modular Reconfigurable Robotic Platform for Research in Machine Resiliency and Adaptation”, Microsoft Gift, $105,000 2007-2008
43. Lipson H. (2007) “A Modular Reconfigurable Platform for Robotics Education”, Festo AG & Co. KG, $89,000 2007-2008
44. Lipson H. (2007) “A 1-MegaVoxel 3D Digital Printer for Multi-material Desktop Microfabrication”, DARPA MTO Young Faculty Award, $150,000 2007-2008
45. Bongard J., Lipson H. (2006) “Automatic Probing and Modeling of Nonlinear Biological Networks: Toward Automated Systems Biology”, Microsoft Corp., $178,000 2006-2007
46. Lipson H., Erickson D. (2006) “SGER: Hierarchical Microfabrication: Actively Programmable Multi-level Fluidic Self-Assembly”, NSF, $130,000 2006-2007
47. 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
48. Lipson H. (2006) “CAREER: Algorithms For Design Of Active Fault-Tolerant Systems”, NSF, $400,000 2006-2011
49. Lipson H. (2005) “ITR: Sketching for Conceptual Visualization, Simulation, and Learning”, NSF, $365,000 2005-2007
50. Valero Cuevas F.C., Lipson H. (2004) “Structure & function of the fingers' tendinous apparatus”, NIH, $1,100,000 2004-2008
51. Lipson H., Hornby G. (2004) “Evolutionary algorithms for recovery of physical robot functionality in unanticipated conditions”, NASA, $474,394 2004-2006
52. Lipson H., (2004) “In-Situ Self-Repair and Adaptation for Autonomous Vehicles”, NASA GSRP 2-Year Graduate Research Fellowship, 2004-2005

53. 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
54. Lipson H., Alon U., (2004) “Computational Methods for Automatic Inference of Biological Networks”, The National Academies, $75,000, 2004-2005
55. Lipson H., (2003) “Embedded Systems for Evolutionary Robotics”, Microsoft unrestricted gift, $25,000, 2003-2004
56. 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
57. Lipson H., (2002) “3D Digital Sketching”, Microsoft unrestricted gift, $116,000, 2002-2004
58. Saylor J.M., David Henderson, Hod Lipson, Francis Moon, (2002) “Kinematic Models for Design Digital Library”, National Science Foundation, $725,000 2002-2004.
59. Lipson H, (2002) “Autonomous Self-Extending Machines for Accelerating Space Exploration”, NASA Institute for Advanced Concept (NIAC), $75,000, 2002-2003.
60. Lipson H., (2002) “Electronic Workflow in Engineering Synthesis Courses”, Cornell CIT, $20,000 2002-2003
61. Pollack J.B., Lipson H. (2001) “Complexity in automatically designed robotics”, DOE – U.S. Department of Energy, $526,000 2002-2004
62. 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.