

## Radhika Nagpal

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### PROFESSIONAL APPOINTMENTS

2017-current	<u>Co-Founder and Scientific Advisor</u> , Root Robotics Inc.
2012-current	<u>Fred Kavli Professor of Computer Science</u> , Paulson School of Engineering and Applied Sciences, Harvard University
2008-current	<u>Core Founding Faculty</u> , Wyss Institute for Biologically-inspired Engineering
2012-2013	Radcliffe Institute Fellow, Harvard University
2004-2012	Affiliated Faculty, Dept. of Systems Biology, Harvard Medical School
2009-2012	Thomas D. Cabot Associate Professor of Computer Science
2004-2009	Assistant Professor of Computer Science School of Engineering and Applied Sciences, Harvard University.
2003-2004	Research Fellow, Dept. of Systems Biology, Harvard Medical School.
2001-2003	Postdoctoral Lecturer, Dept. of EECS, Massachusetts Institute of Technology.
1994-1995	Member of Technical Staff, Bell Laboratories, Murray Hill, NJ.

### EDUCATION

#### Ph.D. in Electrical Engineering and Computer Science, June 2001

*Massachusetts Institute of Technology (MIT), Cambridge, MA*

Thesis: Programmable Self-Assembly using Biologically-Inspired Local Interactions

Advisors: Prof. Gerald J. Sussman, Prof. Harold Abelson

#### S.B. and S.M. in Electrical Engineering and Computer Science, June 1994

*Massachusetts Institute of Technology (MIT), Cambridge, MA*

Thesis: Implementing Single-cycle Store Instructions in Pipelined Microprocessors

Advisors: Dr. Rae McLellan (Bell Labs), Prof. Anant Agarwal (MIT)

### AWARDS AND HONORS

- *TED Speaker*, Annual TED Conference, Vancouver, Apr 2017.
- *Nature 10 Award*: Top ten scientists and engineers who mattered, *Nature*, Dec 2014.
- *Science Top 10 Breakthroughs*, *Science*, Dec 2014.
- *McDonald Award for Excellence in Mentoring and Advising*, Harvard, 2015.
- *Radcliffe Institute Fellowship Award*, Sept 2012.
- *Anita Borg Early Career Award* (BECA), June 2010.
- *NSF Career Award*, June 2007.
- *Microsoft New Faculty Fellowship Award*, May 2005.
- *AT&T Bell Labs Graduate Fellowship Award for Women* (GRPW), 1995-2001.
- *National Talent Search Scholarship Award*, India, 1987.

## SELECTED PUBLICATIONS

### Computer Science and Robotics

1. Justin Werfel, Kirstin Petersen, Radhika Nagpal. 2014. "Designing Collective Behavior in a Termite-Inspired Robot Construction Team." *Science*, 343, 6172. +\*
2. Michael Rubenstein, Alejandro Cornejo, and Radhika Nagpal. 2014. "Programmable self-assembly in a thousand-robot swarm." *Science*, 345, 6198. \*
3. Robert Wood, Radhika Nagpal, Gu-Yeon Wei. 2013. "Flight of the Robobees." *Scientific American*.
4. Florian Berlinger, Jeff Dusek, Melvin Gauci, Radhika Nagpal. 2017. "Robust Maneuverability of a Miniature Low-Cost Underwater Robot using Multiple Fin Actuation." *IEEE Robotics and Automation Letters (RA-L)*, PP, 99.
5. Melinda Malley, Michael Rubenstein, Radhika Nagpal. 2017. "Flippy: A Soft, Autonomous Climber with Simple Sensing and Control." *IEEE/RSJ Intl Conference on Intelligent Robots and Systems (IROS)*.
6. Melvin Gauci, Monica Ortiz, Michael Rubenstein, Radhika Nagpal. 2017. "Error Cascades in Collective Behavior: A Case Study of the Gradient Algorithm on 1000 Physical Agents." *Intl. Conf. on Autonomous Agents Multi-agent Systems (AAMAS)*.
7. Chih-Han Yu, Radhika Nagpal. 2010. "A Self-Adaptive Framework for Modular Robots in Dynamic Environment: Theory and Applications", *Intl. Journal of Robotics Research (IJRR)*. (*IFAAMAS V. Lesser Distinguished Dissertation Award, 2<sup>nd</sup> place*)
8. Yong-Lae Park, Bor-Rong Chen, Nestor Presez-Arancibia, Diana Young, Leia Stirling, Robert Wood, Eugene Goldfield, Radhika Nagpal. 2014. "Design and Control of a Bio-inspired Soft Wearable Robotic Device for Ankle-Foot Rehabilitation." *Bioinspiration & Biomimetics*, 9, 1.
9. Radhika Nagpal. 2002. "Programmable Self-Assembly Using Biologically-Inspired Multiagent Control", *Intl. Conf. Autonomous Agents Multi-Agent Systems (AAMAS)*.
10. Harold Abelson, Don Allen, Daniel Coore, Chris Hanson, George Homsy, Thomas Knight, Radhika Nagpal, Erik Rauch, Gerald Sussman, and Ron Weiss. 2000. "Amorphous Computing", *Communications of the ACM*, Volume 43, Number 5.

### Systems Biology

1. Matt Gibson, Ankit Patel, Radhika Nagpal, Norbert Perrimon. 2006. "The Emergence of Geometric Order in Proliferating Metazoan Epithelia", *Nature*, 442, 7106.
2. Sabine Hauert, Spring Berman, Radhika Nagpal, and Sangeeta Bhatia. 2013. "A computational framework for identifying design guidelines to increase the penetration of targeted nanoparticles into tumors." *Nano Today*, Volume 8, Issue 6.
3. Helen F. McCreery, Zachary A. Dix, Michael D. Breed, Radhika Nagpal. 2016. "Collective strategy for obstacle navigation during cooperative transport by ants." *Journal of Experimental Biology*, 219, 21, Pp. 3366-3375.
4. Ben Green, Paul Bardunias, J. Scott Turner, Radhika Nagpal, Justin Werfel. 2017. "Excavation and aggregation as organizing factors in de novo construction by mound-building termites", *Proceedings of the Royal Society B*, 284, 1856.
5. Mira Radeva, Anna Dornhaus, Nancy Lynch, Radhika Nagpal, Hsin-Hao Su. 2017. "Costs of task allocation with local feedback: Effects of colony size and extra workers in social insects and other multi-agent systems." *PLoS computational biology*, 13, 12.

+ cover article \* selected for Science Top 10 breakthroughs (2014)