

# Dr. Lynne E. Parker

## Professor

Distributed Intelligence Laboratory, Department of Electrical Engineering and Computer Science  
The University of Tennessee, 203 Claxton Complex, Knoxville TN 37996-3450 USA  
phone: +1 (865) 974-4394, fax: +1 (865) 974-4404  
email: parker@eecs.utk.edu, URL: <http://web.eecs.utk.edu/~parker>

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### Research Interests:

- Distributed mobile robotics, artificial intelligence, autonomous learning, sensor networks, embedded and multi-agent systems.

### Education:

- Ph.D.: Massachusetts Institute of Technology, Department of Electrical Engineering and Computer Science, Artificial Intelligence Laboratory, Cambridge, MA, 1994. Minor: Brain and Cognitive Sciences. GPA: 4.9/5.0. Dissertation: *Heterogeneous Multi-Robot Cooperation*.
- M.S.: University of Tennessee, Department of Computer Science, Knoxville, TN, 1988. GPA: 4.0/4.0. Thesis: *A Robot Navigation Algorithm for Moving Obstacles*.
- B.S.: Tennessee Technological University, Department of Computer Science, Cookeville, TN, 1983. Minor: Mathematics. GPA: 4.0/4.0.

### Recent Employment:

- University of Tennessee, Dept. of Electrical Engineering and Computer Science, Knoxville, TN.  
*Professor (2007-Present), Associate Professor (2002-2007)*. Perform research in cooperative robot systems and artificial intelligence; teach courses on robotics, artificial intelligence, machine learning, algorithms, and theoretical computer science; advise graduate students in robotics and artificial intelligence research; founded and direct research activities in the Distributed Intelligence Laboratory.
- Oak Ridge National Laboratory, Computer Science and Mathematics Division, Oak Ridge, TN.  
*Adjunct Distinguished R&D Staff Member (2002 to Present), Distinguished R&D Staff Member (2001 to 2002), Group Leader (1996 to 2001), Senior Research Staff II (2000 to 2001), Senior Research Staff I (1998 to 2000), Research Staff II (1996 to 1998), Research Staff I (1994 to 1996)*.  
Research and development of systems facilitating cooperation among heterogeneous distributed robots. Research issues include intelligent control, learning theory, pattern recognition, neural networks, intelligent decision making, probabilistic reasoning, and computer vision.

### Research Summary:

Dr. Parker is recognized as a leading international expert in the area of multi-robot systems – a field that she helped initiate with her dissertation work on this topic. Dr. Parker's current research is focused on computational issues of distributed intelligent systems – particularly embodied intelligent systems that have a physical instantiation in the world, such as multi-robot teams and sensor networks. Her work is computational, in that she develops new algorithms and software architectures that have provable properties. Her work focuses on basic research that leads to fundamental new concepts that can be demonstrated on real robot or sensor network hardware. Dr. Parker's research has been supported by many governmental and industrial organizations, including the National Science Foundation (NSF), the Defense Advanced Research Projects Agency (DARPA), Oak Ridge National Laboratory (ORNL), the Department of Energy (DOE), NASA's Jet Propulsion Laboratory (JPL), Lockheed Martin Advanced Technology Laboratories, Science Applications International Corporation (SAIC), Caterpillar, Inc., and Hughes Research Laboratory (HRL).

### Teaching:

Dr. Parker is committed to teaching the next generation of scholars in computer science, regularly designing and teaching graduate and undergraduate courses at the University of Tennessee in robotics, artificial intelligence, machine learning, algorithms, data structures, and theory of computation.

## Professional Activities:

Dr. Parker is an active leader in her field, and is a frequent invited speaker at international conferences, workshops, industries, and universities, having given over 75 invited lectures. She has taught invited short courses on the topic of distributed robotics in Argentina and Spain, and has served on an Artificial Intelligence Delegation to the People's Republic of China. Since 2003, she has been an appointed member of advisory panels of the National Research Council, including the Panel on Armor and Armaments, and the Panel on Air and Ground Vehicle Technologies, which oversee research of the Army Research Laboratory. She is also on the Strategic Advisory Commission for the European Commission's research program entitled "Beyond Robotics". She serves on numerous international conference program committees, and has co-organized several conferences and workshops on the topic of distributed robot systems. She is an Editor of the *IEEE Transactions on Robotics*, after having served for several years as an Associate Editor of this journal. She is also on the Editorial Board of *IEEE Intelligent Systems* and the Editorial Advisory Board of the *International Journal of Advanced Robotic Systems*. Dr. Parker is a Senior Member of IEEE, as well as a member of ACM, AAAI, and Sigma Xi.

## Selected Recent Honors and Awards:

- UTK College of Engineering Allen and Hoshall Engineering Faculty Award, 2009.
- UTK Department of Computer Science Professor of the Year Award, 2007.
- UTK Chancellor's Honor: Angie Warren Perkins Award (for scholarship, teaching, and contributions to campus intellectual life), 2006.
- Selected Member of Defense Science Study Group (DSSG), sponsored by DARPA, which trains university professors on national defense and security issues, 2004–2005.
- PECASE Award (U.S. Presidential Early Career Award for Scientists and Engineers), 2000.
- UT-Battelle Technical Achievement Award for Significant Research Achievement, 2000.
- U.S. Department of Energy Office of Science Early Career Scientist and Engineer Award, 1999.

## Publications:

Dr. Parker has over 100 publications, including 6 edited books, in several research areas, including distributed robotics, human-robot cooperation, autonomous robotics, robot learning, and autonomous navigation.

## Selected Significant Publications:

- L. E. Parker, "Multiple Mobile Robot Systems", Chapter 40 of *Springer Handbook of Robotics*, Springer-Verlag, Berlin Heidelberg, 2008: 921-941.
- L. E. Parker and F. Tang, "Building Multi-Robot Coalitions through Automated Task Solution Synthesis", *Proceedings of the IEEE*, Special Issue on Multi-Robot Systems, vol. 94, no. 7, 2006: 1289-1305.
- A. Howard, L. E. Parker, and G. Sukhatme, "Experiments with a Large Heterogeneous Mobile Robot Team: Exploration, Mapping, Deployment, and Detection", *International Journal of Robotics Research*, vol. 25, no. 5-6, 2006: 431-447.
- L. E. Parker, A. Schultz, and F. Schneider (eds.), *Multi-Robot Systems: From Swarms to Intelligent Automata, Volume III*, Springer, 2005.
- L. E. Parker, "Distributed Algorithms for Multi-Robot Observation of Multiple Moving Targets," *Autonomous Robots*, vol. 12, no. 3, 2002: 231-255.
- L. E. Parker, "Lifelong Adaptation in Heterogeneous Multi-robot Teams: Response to Continual Variation in Individual Robot Performance", *Autonomous Robots*, vol. 8, no. 3, 2000: 239-267.
- L. E. Parker, "ALLIANCE: An Architecture for Fault Tolerant Multi-Robot Cooperation," *IEEE Transactions on Robotics and Automation*, vol. 14, no. 2, 1998: 220-240.

(Electronic versions of these and other papers are available at <http://web.eecs.utk.edu/~parker/papers.html>.)