



Mobile Robotic Car Design (Tab Robotics)

By Pushkin Kachroo, Patricia Mellodge

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This book enables hobbyists to build their own robotic car, about 1/10th the size of a standard vehicle, for under \$1000 -- and learn the mechanical and electrical theory and design secrets behind it.

- * Step-by-step instructions for building the vehicle, from theory and design to hardware and software implementation
- * Discussions on mathematical modeling, control design theory, sensors, servos, motors, controllers, and environmental sensing
- * Printed circuit board files for the car can be downloaded for free from accompanying website

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Editorial Review

Review

Learn the theories and principles of robot design and operation as you build this 1:10 scale car that can regulate its own speed and direction, sense and respond to its environment, and even function as a security vehicle. Kachroo and Mellodge (both electrical and computing engineering, Virginia Polytechnic Institute) give step-by step instructions for building the car for less than \$1,000, including its system structure, construction, environmental sensing, DC motors and servos, low-level and microprocessor control, mathematical modeling, control design, and simulation environments. They include photographs, schematics, parts information, and a list of hardware sources, as well as free code for the car's printed circuit board at the companion web site. Now, if you could just shrink yourself to 1:10. (*Sci-Tech Book News* 2004-12-01)

From the Back Cover

BUILD A CAR ROBOT,SAVE THOUSAND\$

(and master some of the most sophisticated concepts in robotics)

This thoughtful guide gives you complete, illustrated plans and instructions for building a 1:10-scale car robot that would cost thousands of dollars if bought off the shelf. But beyond hours of entertainment and satisfaction spent creating and operating an impressive and fun project, ***Mobile Robotic Car Design*** provides serious insight into the science and art of robotics. Written by robotics experts, this book gives you a solid background in electrical and mechanical theory, and the design savvy to conceptualize, enlarge, and build robotics projects of your own.

A WORKING CAR ROBOT—AND AN UNDERSTANDING OF WHAT MAKES IT WORK In these pages, robot designers Pushkin Kachroo and Patricia Mellodge will help you --

- Build an impressive robot vehicle that can regulate its own speed and direction, for a cost of about \$1000.
- Give your robot car the ability to sense and respond to the environment
- Experiment with automatic cruise control that alters speed to meet conditions
- Learn what it takes to build a security robot that can patrol actively or passively
- Grasp the theory and principles behind robot design and operation
- Learn what makes servos, sensors, motors, and controls work
- Examine the source code for the PIC microcontroller and the DSP (digital signal processor)
- Find free code for the car's printed circuit board at the companion website
- Get a complete parts list and list of parts suppliers

About the Author

Pushkin Kachroo, Ph.D., P.E., is a noted robotics theorist and developer. The author of three books and more than 75 papers published in technical journals and conferences, he is an Associate Professor in the Bradley Department of Electrical and Computing Engineering at Virginia Polytechnic Institute, Blacksburg, Virginia. He earned his doctorate at the University of California, Berkeley; his master's degree at Rice University; and his bachelor's degree at the Indian Institute of Technology, Bombay. He obtained his Professional Engineering license from the state of Ohio in 1995.

Patricia Mellodge specializes in mobile robot control. An electrical engineering graduate of the University of Rhode Island, she designed analog control circuits for Optigain, Inc., before joining the Bradley

Department of Electrical and Computing Engineering at Virginia Polytechnic Institute. In 2002, she received her master's degree and is currently pursuing her Ph.D.

Users Review

From reader reviews:

Sonja Johnson:

Have you spare time for just a day? What do you do when you have a lot more or little spare time? Yeah, you can choose the suitable activity with regard to spend your time. Any person spent their particular spare time to take a go walking, shopping, or went to often the Mall. How about open or read a book called Mobile Robotic Car Design (Tab Robotics)? Maybe it is for being best activity for you. You know beside you can spend your time together with your favorite's book, you can smarter than before. Do you agree with its opinion or you have some other opinion?

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Raymond Crandall:

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