

Hacking Your Lego Mindstorms Ev3 Kit

Absolutely no experience needed! Learn robot building from the ground up, hands-on, in full color! Love robots? Start building them. It's way easier than you ever imagined! John Baichtal has helped thousands of people get started with robotics. He knows what beginners need to know. He knows your questions. He knows where you might need extra help. Now, he's brought together this practical knowledge in one incredibly easy tutorial. Hundreds of full-color photos guide you through every step, every skill. You'll start simple, as you build a working robot in the very first chapter. Then, you'll grow your skills to expert-level: powering motors, configuring sensors, constructing a chassis, even programming low-cost Arduino microcontrollers. You'll learn hands-on, through real step-by-step projects...and go straight to the cutting-edge with in-depth sidebars. Wondering just how much you can really do? Baichtal shows you 30 incredible robots built by people just like you! John Baichtal's books about toys, tools, robots, and hobby electronics include Hack This: 24 Incredible Hackerspace Projects from the DIY Movement; Basic Robot Building With Lego Mindstorms NXT 2.0; Arduino for Beginners; MAKE: Lego and Arduino Projects for MAKE (as coauthor); and the forthcoming Building Your Own Drones: The Beginner's Guide to UAVs and ROVs. A founding member of the pioneering Twin Cities Maker hackerspace, he got his start writing for Wired's legendary GeekDad blog, and for DIYer bible MAKE Magazine. Make your robots move with motors and wheels Build solar-powered robots that work without batteries Control robots via Wi-Fi, radio, or even across the Internet Program robots to respond to sensor inputs Use your standard TV remote to control your robots Create robots that detect intruders and shoot them with Nerf® darts Grab and carry objects using claws and grippers Build water-borne robots that float, submerge, and "swim" Create "artbots" that paint or draw original artworks Enable your robots to send text messages when they take specific actions Discover today's new generation of hobbyist-friendly robotics kits Organize your ultimate robot-builder's toolbox Master simple safety routines that protect you whatever you're building

Basic Robot Building with LEGO® Mindstorms® NXT 2.0 ABSOLUTELY NO EXPERIENCE NEEDED! Learn LEGO® Mindstorms® NXT 2.0 from the ground up, hands-on, in full color! Ever wanted to build a robot? Now's the time, LEGO® Mindstorms® NXT 2.0 is the technology, and this is the book. You can do this, even if you've never built or programmed anything! Don't worry about where to begin: start right here. John Baichtal explains everything you need to know, one ridiculously simple step at a time... and shows you every key step with stunningly clear full-color photos! You won't just learn concepts—you'll put them to work in three start-to-finish projects, including three remarkable bots you can build right this minute, with zero knowledge of programming or robotics. It's going to be simple—and it's going to be fun. All you need is in the box—and in this book! Unbox your LEGO® Mindstorms® NXT 2.0 set, and discover exactly what you've got Build a Backscratching Bot immediately Connect the NXT Intelligent Brick to your computer (Windows or Mac) Navigate the Brick's menus and upload programs Start writing simple new programs—painlessly Build the Clothesline Cruiser, a robot that travels via rope Program your robot's movements Learn to create stronger, tougher models Help your robot sense everything from distance and movement to sound and color Build a miniature tank-treaded robot that knows how to rebound Write smarter programs by creating your own programming blocks Discover what to learn next, and which additional parts you might want to buy JOHN BAICHTAL is a contributor to MAKE magazine and Wired's GeekDad blog. He is the co-author of The Cult of Lego (No Starch) and author of Hack This: 24 Incredible Hackerspace Projects from the DIY Movement (Que). Most recently he wrote Make: Lego and Arduino Projects for MAKE, collaborating with Adam Wolf and Matthew Beckler. He lives in Minneapolis, Minnesota, with his wife and three children.

Medieval LEGO takes you through real English history in the middle ages with a unique twist, with every event illustrated by a tiny little LEGO scene. With contributions by medievalists and scholars, this book brings medieval history to life in a fun, kid-friendly way. Inside, you'll learn about events like the Battle of Hastings, the chartering of Oxford University, and the signing of the Magna Carta. You'll witness the infamous Black Death, and the Great Famine, and you'll read about famous historical figures like Robin Hood, Richard the Lionheart, Geoffrey Chaucer, and William the Conqueror. Grab your broadsword and turn the page to join the adventure.

LEGO MINDSTORMS has changed the way we think about robotics by making it possible for anyone to build real, working robots. The latest MINDSTORMS set, EV3, is more powerful than ever, and The LEGO MINDSTORMS EV3 Discovery Book is the complete, beginner-friendly guide you need to get started. Begin with the basics as you build and program a simple robot to experiment with motors, sensors, and EV3 programming. Then you'll move on to a series of increasingly sophisticated robots that will show you how to work with advanced programming techniques like data wires, variables, and custom-made programming blocks. You'll also learn essential building techniques like how to use beams, gears, and connector blocks effectively in your own designs. Master the possibilities of the EV3 set as you build and program: –The EXPLOR3R, a wheeled vehicle that uses sensors to navigate around a room and follow lines –The FORMULA EV3 RACE CAR, a streamlined remote-controlled race car –ANTY, a six-legged walking creature that adapts its behavior to its surroundings –SK3TCHBOT, a robot that lets you play games on the EV3 screen –The SNATCH3R, a robotic arm that can autonomously find, grab, lift, and move the infrared beacon –LAVA R3X, a humanoid robot that walks and talks More than 150 building and programming challenges throughout encourage you to think creatively and apply what you've learned to invent your own robots. With The LEGO MINDSTORMS EV3 Discovery Book as your guide, you'll be building your own out-of-this-world creations in no time! Requirements: One LEGO MINDSTORMS EV3 set (LEGO SET #31313)

Creating Cool MINDSTORMS NXT Robots

Python Programming for Hackers and Pentesters

The Art of LEGO Scale Modeling

LEGO® MINDSTORMS® EV3

Rules of Play

Building Robots With Lego Mindstorms

Hacking Your Lego Mindstorms EV3 Kit

Build and Program Your Own LEGO® MINDSTORMS® EV3 Robots Absolutely no experience needed! Build and program amazing robots with the new LEGO MINDSTORMS EV3! With LEGO MINDSTORMS EV3, you can do modern robotics without complex wiring or soldering! This step-by-step, full-color tutorial teaches all you need to know, including basic programming skills most introductory guides skip. Even better—it's packed with hands-on projects! Start by "unboxing" your new EV3 kit and getting to know every component: motors, sensors, connections, remotes, and the EV3's more powerful, easier-to-program "brick." Then walk through building your first "bots"...creating more sophisticated robots with wheels and motors...engineering for strength and balance..."driving" your robot...building robots that recognize colors and do card tricks...and more! LEGO MINDSTORMS EV3 robotics is the perfect pathway into science and technology... and this book is the easiest way to get started, even if you

have absolutely no robotics or programming experience! Explore your new EV3 kit: both the retail “Home” and LEGO “Education” versions Get foolproof help with building the Track3r and other standard robots Build cars and tanks, and hack them to do even more Write programs that enable your robots to make their own decisions Improve your programs with feedback Handle more sophisticated engineering and programming tasks Troubleshoot problems that keep your robot from moving Get involved with the worldwide MINDSTORMS® robotics community Marziah Karch is Senior Instructional Designer at NWEA, a Google Expert at About.com, and Senior Web Editor at GeekMom. She has more than a decade of experience in instructional technology and was senior educational technologist for Johnson County Community College, where she also taught interactive media development. She holds a master’s degree in Instructional Design and Technology, and is pursuing a doctorate in Library and Information Science. Her hands-on technology experience ranges from 3D animation to multimedia learning, content management to music video creation. She has extensively explored the educational potential of LEGO robotics. She is the author of Android Tablets Made Simple. This book is not authorized or endorsed by the LEGO® Group.

Design that works! It's what you need if you're building and competing with LEGO MINDSTORMS EV3 robotics. You'll find uses for the new light sensors and gyro sensors in navigation, helping you to follow lines and make turns more consistently. Approach collision detection with greater confidence through EV3's ultrasonic sensor. Learn new designs for power attachments. Winning Design! is about building with LEGO MINDSTORMS EV3 for fun, for education, but especially for competition. Author James Trobaugh is an experienced coach and leader in the FIRST LEGO League. In this book, he shares his hard-won knowledge about design principles and techniques that contribute toward success in robotics competitions. Winning Design! unlocks the secrets of reliable design using LEGO MINDSTORMS EV3. You'll learn proven design patterns that you can employ for common tasks such as turning, pushing, and pulling. You'll reduce and compensate for variation in performance from battery charge levels and motor calibration differences. You'll produce designs that won't frustrate you by not working, but that will delight you with their reliable performance in the heat of competition. Good design is about more than just the hardware. Software counts for a lot, and Winning Design! has you covered. You'll find chapters on program design and organization with tips on effective coding and documentation practices. You'll learn about master programs and the needed flexibility they provide. There's even a section on presenting your robot and software designs to the judges. Winning Design! is the book you need if you're involved in competitions such as FIRST LEGO League events. Whether coach, parent, or student, you'll find much in this book to make your design and competition experience fun and memorable, and educational. Don't be without this book if you're leading a team of young people as they build skills toward a future in technology. What You Will Learn Build winning robots on a foundation of good chassis design Reduce variability in robot mechanical movements Design modular attachments for quick change during competition Solve navigation problems such as steering, squaring up, and collision detection Manage software using master programs and other techniques Power your robot attachments via motors and pneumatics Who This Book Is For Students, parents, teachers, and coaches involved in LEGO MINDSTORMS EV3 robot design and programming.

Build and Program Over 20 Challenging Design Projects in Just 30 Minutes Each with the New Generation of LEGO® MINDSTORMS® More powerful and intuitive than ever, LEGO® MINDSTORMS® NXT is a new robotics toolset that enables robot enthusiasts and hobbyists to build and program all kinds of projects. The LEGO® MINDSTORMS® NXT Hacker's Guide explores this new generation of LEGO MINDSTORMS, providing a collection of projects, how-to expertise, insider tips, and over 500 illustrations to help readers become expert NXT hackers. This cutting-edge guide describes new advances that make LEGO MINDSTORMS NXT such a great robotics resource. The book explains the all-new NXT intelligent brick...the interactive servo motors with rotation sensors that align speed for precise control...the ultrasonic sensor that allows robots to “see” by responding to movement...the improved light and touch sensors that let robots detect color and feel...and much more. The LEGO® MINDSTORMS® NXT Hacker's Guide features: Expert, insightful commentary by a member of the LEGO MINDSTORMS Developer Program A hands-on account of the new technologies and expanded sensor capabilities of LEGO MINDSTORMS NXT A collection of 10 hacking projects with step-by-step instructions for creating things ranging from solar power to ZigBee® technology to tank tread feet [“projects” appears twice.] A portfolio of 12 exciting design projects featuring R. Buckminster Fuller's Geodesic Dome, Rem Koolhaas' Seattle Central Library, and the world's first NXT wristwatch Complete disclosure about a “secret” game that is hidden inside every LEGO MINDSTORMS NXT kit An in-depth guide to the NXT programming language A special LEGO factory kit offer available only for readers of this book Inside This Groundbreaking NXT Reference • Your First Robot • Stupid RCX Tricks • Save Your RIS • As Smart as a Brick • MOVE IT! With Servo Motors • Hmm, I Sense Something • Yes, But I Don't Know How to Program • Testing, Testing; Oh, Trouble Shoot • Katherine's Best Hacking Projects • Katherine's Design Fun House • NXT Programming Language Guide • NXT Elements • NXT Resources Discover how to use the LEGO MINDSTORMS Inventor kit and boost your confidence in robotics Key Features Gain confidence in building robots using creative designs Learn advanced robotic features and find out how to integrate them to build a robot Work with the block coding language used in robotics software in a practical way Book Description LEGO MINDSTORMS Robot Inventor is the latest addition to the LEGO MINDSTORMS theme. It features unique designs that you can use to build robots, and also enable you to perform activities using the robot inventor application. You'll begin by exploring the history of LEGO MINDSTORMS, and then delve into various elements of the Inventor kit. Moving on, you'll start working on different projects which will prepare you to build a variety of smart robots. The first robotic project involves designing a claw to grab objects, and helps you to explore how a smart robot is used in everyday life and in industry. The second project revolves around building a working guitar that can be played and modified to meet the needs of the user. As you advance, you'll explore the concept of biomimicry as you discover how to build a scorpion robot. In addition to this, you'll also work on a classic robotic challenge by building a sumobot. Throughout the book, you'll come across a variety of projects that will provide you with hands-on experience in building creative robots, such as building a Dragster, Egg Decorator, and Plankton from Spongebob Squarepants. By the end of this LEGO book, you'll have got to grips with the concepts behind building a robot, and also found creative ways to integrate them using the application based on your creative insights and ideas. What you will learn Discover how the Robot Inventor kit works, and explore its parts and the elements inside them Delve into the block coding language used to build robots Find out how to create interactive robots with the help of sensors Understand the importance of real-world robots in today's landscape Recognize different ways to build new ideas based on existing solutions Design basic to advanced level robots using the Robot Inventor kit Who this book is for This book is for robot enthusiasts, LEGO lovers, hobbyists, educators, students, and anyone looking to learn about the new LEGO Robot Inventor kit. This book is designed to go beyond the basic build through to intermediate and advanced builds, and enables you to add your personal flair to the builds and codes.

*Learn to play with the LEGO MINDSTORMS Robot Inventor kit and build creative robots
The LEGO MINDSTORMS Robot Inventor Activity Book*

Winning Design!

The Art of LEGO MINDSTORMS EV3 Programming

The Mayan Adventure

Robot Builder

Building Robots with LEGO Mindstorms NXT

A guide to the LEGO Mindstorms Robotics Invention System explains how to build and program mobile robots using LEGO blocks and third party software, and includes plans for hands-on robot projects

The fast and easy way to pick out, set up, and learn to fly your drone Ready to soar into the world of unmanned aircraft? Drones For Dummies introduces you to the fascinating world of UAVs. Written in plain English and brimming with friendly instruction, Drones For Dummies provides you with the information you need to find and purchase the right drone for your needs, examples of ways to use a drone, and even drone etiquette and the laws and regulations governing consumer drone usage. Plus, you'll discover the basics of flight, including how to use a drone to capture photos and video. Originally designed to assist in military and special operations applications, the use of drones has expanded into the public service sector and the consumer market for people looking to have a good time flying an aircraft remotely. Drones For Dummies covers everything you need to know to have fun with your UAV, and is packed with cool ways to expand your drone's use beyond simply flying. Pick the perfect drone to suit your needs Properly set up and fly a drone Use a drone to capture images and footage with a camera Tips for maintaining your drone If you're interested in the exciting new technology of unmanned aircraft vehicles, Drones For Dummies helps you take flight.

The LEGO® MINDSTORMS® EV3 Idea Book explores dozens of creative ways to build amazing mechanisms with the LEGO MINDSTORMS EV3 set. Each model includes a list of the required parts, minimal text, and colorful photographs from multiple angles so you can re-create it without the need for step-by-step instructions. You'll learn to build cars with real suspension, steerable crawlers, ball-shooters, grasping robotic arms, and other creative marvels. Each model demonstrates simple mechanical principles that you can use as building blocks for your own creations. Best of all, every part you need to build these machines comes in one LEGO set (#31313)!

An impassioned look at games and game design that offers the most ambitious framework for understanding them to date. As pop culture, games are as important as film or television—but game design has yet to develop a theoretical framework or critical vocabulary. In Rules of Play Katie Salen and Eric Zimmerman present a much-needed primer for this emerging field. They offer a unified model for looking at all kinds of games, from board games and sports to computer and video games. As active participants in game culture, the authors have written Rules of Play as a catalyst for innovation, filled with new concepts, strategies, and methodologies for creating and understanding games. Building an aesthetics of interactive systems, Salen and Zimmerman define core concepts like "play," "design," and "interactivity." They look at games through a series of eighteen "game design schemas," or conceptual frameworks, including games as systems of emergence and information, as contexts for social play, as a storytelling medium, and as sites of cultural resistance. Written for game scholars, game developers, and interactive designers, Rules of Play is a textbook, reference book, and theoretical guide. It is the first comprehensive attempt to establish a solid theoretical framework for the emerging discipline of game design.

A Beginner's Guide to Building and Programming LEGO Robots

A Beginner's Guide to Building and Programming Robots

The LEGO Arduino Cookbook

Maximum Lego Ev3

The LEGO Trains Book

The LEGO Architect

LEGO MINDSTORMS NXT Hacker's Guide

Virtually build any LEGO creation you can imagine—with any LEGO part ever made! This fun guide shows how to create just about anything from virtual LEGO blocks using free software. Learn how to install and customize LEGO Digital Designer, navigate the user interface, and get started on your own projects. LDraw™ and Mecabricks are also clearly explained. Building with Virtual LEGO: Getting Started with LEGO Digital Designer, LDraw™, and Mecabricks features DIY projects that illustrate each technique and software tool. You will see how to upload and share your creations online—even modify projects that others have built! Find out how to:

- Download, set up, and configure LEGO Digital Designer
- Navigate the LDD user interface, menus, and tools
- Identify the different Lego parts and explore brick palettes
- Quickly and easily start creating your own LEGO models
- Access the huge library of out-of-print LEGO bricks in LDraw™, including those designed by hobbyists
- Get up and running on Mecabricks and launch creative projects online
- Write clear instructions and share them with other virtual LEGO enthusiasts
- Create custom bricks and participate in the LDraw™ parts design process

Through the use of a fictional story, this book details how to build and design robots. Max, the story's main character, is part of an archaeological expedition investigating a newly discovered Mayan pyramid. During the expedition, the team encounters various problems, each solved with the help of a unique robot that Max creates using the Lego Mindstorms NXT kit. Although the book reveals possible robotic solutions and offers detailed information on how to build and program each robot, readers are encouraged to come up with their own. The book includes complete building theory information and provides worksheets for brainstorming.

EV3 without limits! Build 5 amazing robotics projects that take DIY to a whole new level! You can do way more with your LEGO Mindstorms EV3 kit than anyone ever told you! In this full-color, step-by-step

tutorial, top-maker and best-selling author John Baichtal shows you how to transcend Mindstorms' limits as you build five cutting-edge robotics projects. You'll discover just how much you can do with only the parts that came with your kit – and how much farther you can go with extremely low-cost add-ons like Arduino and Raspberry Pi. You'll learn how to reprogram your Mindstorms Intelligent Brick to add additional hardware options and create more complex programs. Hundreds of full-color, step-by-step photos teach you every step, every skill. Whenever you're ready for advanced techniques, Baichtal explains them in plain English. Here's just some of what you'll learn how to do: Build a drawing Plotter Bot that gyrates to draw new patterns Hack Mindstorms' wires – and control robots without wires Create a remote-controlled crane, and operate it from your smartphone Use the EV3 brick to control third-party electronic modules of all kinds Replace the EV3 brick with smarter, more flexible Arduino, Raspberry Pi, or BeagleBone Black hardware Build a robotic flower whose petals open and close based on time of day Use third-party sensors to build robots that can sense practically anything Load an alternate operating system onto your EV3 brick 3D print, laser, and mill your own perfect LEGO parts Create ball contraptions, and extend them with your own custom parts Make a pole-climbing robot – and hook up an altimeter to track its height This book is not authorized or endorsed by the LEGO® Group. Register Your Book at www.quepublishing.com/register and receive 35% off your next purchase.

Hacking Your LEGO Mindstorms EV3 Kit Que Publishing

Extending the LEGO MINDSTORMS NXT to the Next Level, Second Edition

Smart Robotics with LEGO MINDSTORMS Robot Inventor

Building Robots with Java Brains

Build Working Replicas of Four of the World's Most Impressive Guns

95 Simple Robots and Hints for Making More!

Black Hat Python, 2nd Edition

Basic Robot Building With LEGO Mindstorms NXT 2.0

A follow-up to the best-selling LEGO® Technic Idea Book series by master builder and LEGO luminary Yoshihito Isogawa, readers learn to create their own robots from the LEGO MINDSTORMS Robot Inventor Set. If you've had your fun building programmable, intelligent creations with the LEGO® MINDSTORMS® Robot Inventor set, it's time to take your bot-building to the next level! With over 125 new models, the LEGO MINDSTORMS Robot Inventor Idea Book will unleash your imagination and open up limitless possibilities for unique robotic designs. You'll learn how to build basic mechanisms with motors and sensors, robots that can walk or drive themselves, and practical tools for lifting, opening doors, drawing, and even launching projectiles. Then, bring them all to life with the LEGO MINDSTORMS Robot Inventor App, which lets you program your bots to perform tasks and missions. Each model is paired with an illustrated list of parts and multi-angled color photographs, so you can easily reproduce the projects without the need for step-by-step instructions. Best of all, you'll also be inspired to combine various mechanisms into your own interactive inventions, toys, cars, games, and more! To build the book's models, all you need is the LEGO® MINDSTORMS® Robot Inventor set (#51515) and a smart device that can run the MINDSTORMS App.

The Ultimate Tool for MINDSTORMS® Maniacs The new MINDSTORMS kit has been updated to include a programming brick, USB cable, RJ11-like cables, motors, and sensors. This book updates the robotics information to be compatible with the new set and to show how sound, sight, touch, and distance issues are now dealt with. The LEGO MINDSTORMS NXT and its predecessor, the LEGO MINDSTORMS Robotics Invention System (RIS), have been called "the most creative play system ever developed." This book unleashes the full power and potential of the tools, sensors, and components that make up LEGO MINDSTORMS NXT. It also provides a unique insight on newer studless building techniques as well as interfacing with the traditional studded beams. Some of the world's leading LEGO MINDSTORMS inventors share their knowledge and development secrets. You will discover an incredible range of ideas to inspire your next invention. This is the ultimate insider's look at LEGO MINDSTORMS NXT system and is the perfect book whether you build world-class competitive robots or just like to mess around for the fun of it. Featuring an introduction by astronaut Dan Barry and written by Dave Astolfo, Invited Member of the MINDSTORMS Developer Program and MINDSTORMS Community Partners (MCP) groups, and Mario and Giulio Ferrari, authors of the bestselling Building Robots with LEGO Mindstorms, this book covers: Understanding LEGO Geometry Playing with Gears Controlling Motors Reading Sensors What's New with the NXT? Building Strategies Programming the NXT Playing Sounds and Music Becoming Mobile Getting Pumped: Pneumatics Finding and Grabbing Objects Doing the Math Knowing Where You Are Classic Projects Building Robots That Walk Robotic Animals Solving a Maze Drawing and Writing Racing Against Time Hand-to-Hand Combat Searching for Precision Complete coverage of the new Mindstorms NXT kit Brought to you by the DaVinci's of LEGO Updated edition of a bestseller

An introduction to the LEGO Mindstorms Robot Inventor Kit through seven engaging projects. With its amazing assortment of bricks, motors, and smart sensors, the LEGO® MINDSTORMS® Robot Inventor set opens the door to a physical-meets-digital world. The LEGO MINDSTORMS Robot Inventor Activity Book expands that world into an entire universe of incredibly fun, uniquely interactive robotic creations! Using the Robot Inventor set and a device that can run the companion app, you'll learn how to build bots beyond your imagination—from a magical monster that gobbles up paper and answers written questions, to a remote-controlled transformer car that you can drive, steer, and shape-shift into a walking

humanoid robot at the press of a button. Author and MINDSTORMS master Daniele Benedettelli, a robotics expert, takes a project-based approach as he leads you through an increasingly sophisticated collection of his most captivating robot models, chapter by chapter. Each project features illustrated step-by-step building instructions, as well as detailed explanations on programming your robots through the MINDSTORMS App—no coding experience required. As you build and program an adorable pet turtle, an electric guitar that lets you shred out solos, a fully functional, whiz-bang pinball machine and more, you'll discover dozens of cool building and programming techniques to apply to your own LEGO creations, from working with gears and motors, to smoothing out sensor measurement errors, storing data in variables and lists, and beyond. By the end of this book, you'll have all the tools, talent and inspiration you need to invent your own LEGO MINDSTORMS robots.

Provides step-by-step instructions for building a variety of LEGO Mindstorms NXT and Arduino devices.

The Beginner's Guide to Building Robots

The LEGO MINDSTORMS EV3 Laboratory

Mission Python

Getting Started with LEGO Digital Designer, LDrawTM, and Mecabricks

LEGO MINDSTORMS EV3 Design Patterns for Fun and Competition

Building with Virtual LEGO

16 Rule-Breaking Inventions

Learn the model-making process from start to finish, including the best ways to choose scale, wheels, motors, and track layout. Get advice for building steam engines, locomotives, and passenger cars, and discover fresh ideas and inspiration for your own LEGO train designs.

Inside you'll find: -A historical tour of LEGO trains -Step-by-step building instructions for models of the German Inter-City Express (ICE), the Swiss "Crocodile," and a vintage passenger car -Tips for controlling your trains with transformers, receivers, and motors -Advice on advanced building techniques like SNOT (studs not on top), microstriping, creating textures, and making offset connections -Case studies of the design process -Ways to use older LEGO pieces in modern designs For ages 10+

Although LEGO MINDSTORMS NXT allows anyone to build complex inventions, there are limits to what you can do with what comes inside the box. This book shows you how to advance the NXT with more than 45 exciting projects that include creating a cool magic wand that writes words in thin air, building a remotely guided vehicle, and constructing sophisticated robots that can sense color, light, temperature, and more. All projects are explained with easy-to-follow, step-by-step instructions, so you'll be able to create them successfully whether you're a novice or an expert. This book also shows you how to expand the programming software and use the alternative language NXC. New input devices—such as keypads, sensors, and even the human body—are covered, along with fun games such as surfing, PONG, and SIMON. On the serious side, there are classic engineering challenges such as controlling an inverted pendulum, making a robot that follows a wall, and building several light-seeking vehicles. Some projects are just entertaining, such as the Etch-A-NXT; others are useful, such as a motorized camera mount that takes panoramic photographs. This second edition accounts for the important changes found in the next generation NXT, and it also covers the original concepts in greater depth. Details are presented for practically unlimited expansion of the NXT inputs and outputs by using the I2C communications bus, and several power amplifier designs allow the NXT outputs to drive bigger motors. Instructions are also included for adapting LEGO Power Functions motors to work directly with the NXT.

With its colorful, block-based interface, The LEGO® MINDSTORMS® EV3 programming language is designed to allow anyone to program intelligent robots, but its powerful features can be intimidating at first. The Art of LEGO MINDSTORMS EV3 Programming is a full-color, beginner-friendly guide designed to bridge that gap. Inside, you'll discover how to combine core EV3 elements like blocks, data wires, files, and variables to create sophisticated programs. You'll also learn good programming practices, memory management, and helpful debugging strategies—general skills that will be relevant to programming in any language. All of the book's programs work with one general-purpose test robot that you'll build early on. As you follow along, you'll program your robot to: –React to different environments and respond to commands –Follow a wall to navigate a maze –Display drawings that you input with dials, sensors, and data wires on the EV3 screen –Play a Simon Says–style game that uses arrays to save your high score –Follow a line using a PID-type controller like the ones in real industrial systems The Art of LEGO MINDSTORMS EV3 Programming covers both the Home and Education Editions of the EV3 set, making it perfect for kids, parents, and teachers alike. Whether your robotics lab is the living room or the classroom, this is the complete guide to EV3 programming that you've been waiting for. Requirements: One LEGO MINDSTORMS EV3 Home OR Education set (#31313 OR #45544).

Discover the many features of the LEGO® MINDSTORMS® NXT 2.0 set. The LEGO MINDSTORMS NXT 2.0 Discovery Book is the complete, illustrated, beginner's guide to MINDSTORMS that you've been looking for. The crystal clear instructions in the Discovery Book will show you how to

harness the capabilities of the NXT 2.0 set to build and program your own robots. Author and robotics instructor Laurens Valk walks you through the set, showing you how to use its various pieces, and how to use the NXT software to program robots. Interactive tutorials make it easy for you to reach an advanced level of programming as you learn to build robots that move, monitor sensors, and use advanced programming techniques like data wires and variables. You'll build eight increasingly sophisticated robots like the Strider (a six-legged walking creature), the CCC (a climbing vehicle), the Hybrid Brick Sorter (a robot that sorts by color and size), and the Snatcher (an autonomous robotic arm). Numerous building and programming challenges throughout encourage you to think creatively and to apply what you've learned as you develop the skills essential to creating your own robots. Requirements: One LEGO MINDSTORMS NXT 2.0 set (#8547) Features: –A complete introduction to LEGO MINDSTORMS NXT 2.0 –Building and programming instructions for eight innovative robots –50 sample programs and 72 programming challenges (ranging from easy to hard) encourage you to explore newly learned programming techniques –15 building challenges expand on the robot designs and help you develop ideas for new robots Who is this book for?This is a perfect introduction for those new to building and programming with the LEGO MINDSTORMS NXT 2.0 set. The book also includes intriguing robot designs and useful programming tips for more seasoned MINDSTORMS builders.

181 Simple Machines and Clever Contraptions

Drones For Dummies

The LEGO MINDSTORMS Robot Inventor Idea Book

Expanding the Realm of MINDSTORMS EV3 Invention

The LEGO MINDSTORMS EV3 Discovery Book

The LEGO MINDSTORMS EV3 Idea Book

Medieval LEGO

The LEGO® BOOST® Idea Book contains dozens of ideas for building simple robots with the LEGO BOOST set. The LEGO® BOOST® Idea Book explores 95 creative ways to build simple robots with the LEGO BOOST set. Each model includes a parts list, minimal text, screenshots of programs, and colorful photographs from multiple angles so you can re-create it without step-by-step instructions. You'll learn to build robots that can walk and crawl, shoot and grab objects, and even draw using a pen! Each model demonstrates handy mechanical principles that you can use to come up with your own creations. Models come with building hints and ideas for putting your own spin on things. Best of all, every part you need to build these models comes in the LEGO BOOST Creative Toolbox (set #17101).

The LEGO® MINDSTORMS® EV3 set offers so many new and exciting features that it can be hard to know where to begin. Without the help of an expert, it could take months of experimentation to learn how to use the advanced mechanisms and numerous programming features. In The LEGO MINDSTORMS EV3 Laboratory, author Daniele Benedettelli, robotics expert and member of the elite LEGO MINDSTORMS Expert Panel, shows you how to use gears, beams, motors, sensors, and programming blocks to create sophisticated robots that can avoid obstacles, walk on two legs, and even demonstrate autonomous behavior. You'll also dig into related math, engineering, and robotics concepts that will help you create your own amazing robots. Programming experiments throughout will challenge you, while a series of comics and countless illustrations inform the discussion and keep things fun. As you make your way through the book, you'll build and program five wicked cool robots: –ROV3R, a vehicle you can modify to do things like follow a line, avoid obstacles, and even clean a room –WATCHGOOZ3, a bipedal robot that can be programmed to patrol a room using only the Brick Program App (no computer required!) –SUP3R CAR, a rear-wheel-drive armored car with an ergonomic two-lever remote control –SENTIN3L, a walking tripod that can record and execute color-coded sequences of commands –T-R3X, a fearsome bipedal robot that will find and chase down prey With The LEGO MINDSTORMS EV3 Laboratory as your guide, you'll become an EV3 master in no time.

Requirements: One LEGO MINDSTORMS EV3 set (LEGO SET #31313)

Push into new fields of technology using LEGO and Arduino with the projects in this Cookbook. MINDSTORMS EV3 inventions don't have to be confined to LEGO factory-made sensors. Incorporate a wide range of sensors, displays, LED arrays, actuators, and even a smartphone into your creations. Add amazing capabilities to your LEGOs by building things such as a metal detector, long-range lidar, audio spectrum analyzer, weather station, and a smartphone. Step-by-step instructions bring these new devices to life. You'll work with the reliable and inexpensive Arduino UNO to take your projects even further and make them truly smart. Learn to set up and program your Arduino UNO. Then learn data communications protocols (I2C, SPI, and PWM) to link sensors to the Arduino. A variety of data communications techniques are also demonstrated on passing data between the Arduino and the MINDSTORMS EV3 Intelligent Brick. Equipped with these new tools, LEGO inventors can build vast new capabilities into their designs. What You'll Learn Interface new sensors, devices, and communications with LEGO Mindstorms EV3 Work with communication protocols of pulse width modulation (PWM), I2c, and SPI Convert pulse width modulation to analog voltage with

resistor and capacitor components Who This Book Is For Tech savvy fans of LEGO projects and hardware hackers. Also coaches or students involved in a school science/technology project or design competition.

The Art of LEGO Scale Modeling displays amazing, fan-built LEGO recreations of real-life vehicles, showing off every amazing detail with high-quality photographs. You'll love poring over dozens of models, including Formula 1 racers, construction vehicles, ships, trains, airplanes, and all kinds of trucks. Authors Dennis Glaasker and Dennis Bosman share their own impressive LEGO models as well as highlight models from builders around the world. The Art of LEGO Scale Modeling also includes tips and tricks that describe the design and building process.

Make: Lego and Arduino Projects

10 LED Projects for Geeks

Build, Program, and Experiment with Five Wicked Cool Robots

50 Easy-to-Build Animals

Mazes for Programmers

Build Light-Up Costumes, Sci-Fi Gadgets, and Other Clever Inventions

Hacking Your LEGO Mindstorms EV3 Kit

Lego robots! Mindstorms are sweeping the world and fans need to learn how to programme them Lego Mindstorms are a new generation of Lego Robots that can be manipulated using microcomputers, light and touch sensors, an infrared transmitter and CD-ROMs. Since Lego launched Lego Mindstorms in late 1998 sales have skyrocketed - with no sign of slowing down. Mindstorms have captured the imagination of adults and children alike, creating a subculture of Mindstorm enthusiasts around the world. The kits are now a staple part of engineering and computer science classes at many high profile Universities. Building Robots with Lego Mindstorms provides readers with a fundamental understanding of the geometry, electronics, engineering, and programming required to build your own robots.

Mario and Giulio Ferrari are world-renowned experts in the field of Lego Mindstorms robotics, and in this book they share their unrivaled knowledge and expertise of robotics as well as provide a series of chapters detailing how to design and build the most exotic robots. Mario and Giulio also give detailed explanations of how to integrate Lego Mindstorms kits with other Lego programmable bricks such as Scout and Cybermaster, as well as with non-robotic Lego Technics models.

Provides an in-depth introduction to the LEGO Mindstorms EV3 kit, covering such topics as installing leJOS, motors, sensors, navigation, sound, remote control, and debugging, with step-by-step, illustrated instructions for eight unique robots.

Fully-updated for Python 3, the second edition of this worldwide bestseller (over 100,000 copies sold) explores the stealthier side of programming and brings you all new strategies for your hacking projects. When it comes to creating powerful and effective hacking tools, Python is the language of choice for most security analysts. In Black Hat Python, 2nd Edition, you'll explore the darker side of Python's capabilities—writing network sniffers, stealing email credentials, brute forcing directories, crafting mutation fuzzers, infecting virtual machines, creating stealthy trojans, and more. The second edition of this bestselling hacking book contains code updated for the latest version of Python 3, as well as new techniques that reflect current industry best practices. You'll also find expanded explanations of Python libraries such as ctypes, struct, lxml, and BeautifulSoup, and dig deeper into strategies, from splitting bytes to leveraging computer-vision libraries, that you can apply to future hacking projects. You'll learn how to:

- Create a trojan command-and-control using GitHub
- Detect sandboxing and automate common malware tasks, like keylogging and screenshotting
- Escalate Windows privileges with creative process control
- Use offensive memory forensics tricks to retrieve password hashes and inject shellcode into a virtual machine
- Extend the popular Burp Suite web-hacking tool
- Abuse Windows COM automation to perform a man-in-the-browser attack
- Exfiltrate data from a network most sneakily

When it comes to offensive security, your ability to create powerful tools on the fly is indispensable. Learn how with the second edition of Black Hat Python. New to this edition: All Python code has been updated to cover Python 3 and includes updated libraries used in current Python applications. Additionally, there are more in-depth explanations of the code and the programming techniques have been updated to current, common tactics. Examples of new material that you'll learn include how to sniff network traffic, evade anti-virus software, brute-force web applications, and set up a command-and-control (C2) system using GitHub.

10 LED Projects for Geeks is a collection of interactive and customizable projects that all have the humble LED in common, but don't write them off as basic! You'll learn how to make challenging and imaginative gadgets like a magic wand that controls lights using hand gestures, a pen-sized controller for music synthesizers, a light strip that dances to the beat of music, and even an LED sash that flashes scrolling text you send from your phone. Every project includes photos, step-by-step directions, colorful circuit diagrams, and the complete code to bring the project to life. As you work your way through the book, you'll pick up adaptable skills that will take your making abilities to the next level. You'll learn how to:

- Design versatile circuits for your own needs
- Build and print a custom printed circuit board
- Create flexible circuits which you can use to make any wearable you dream up
- Turn analog signal into digital data your microcontroller can read
- Use gesture recognition and wireless interaction for your own Internet of Things projects
- Experiment with copper tape and create circuits with paper and foil
- Build "smart"

gadgets that make decisions with sensors If you want to experiment with LEDs and circuits, learn some new skills, and make cool things along the way, 10 LED Projects for Geeks is your first step.

Game Design Fundamentals

Arduino for Beginners

High-Tech LEGO Projects

Essential Skills Every Maker Needs

The LEGO MINDSTORMS NXT 2.0 Discovery Book

LEGO Heavy Weapons

The LEGO BOOST Idea Book

Travel through the history of architecture in The LEGO Architect. You ' ll learn about styles like Art Deco, Modernism, and High-Tech, and find inspiration in galleries of LEGO models. Then take your turn building 12 models in a variety of styles. Snap together some bricks and learn architecture the fun way!

Provides instructions for building replicas of firearms, including a desert eagle, jungle carbine, and an AKS-74U.

Program a graphical adventure game in this hands-on, beginner-friendly introduction to coding in the Python language. Launch into coding with Mission Python, a space-themed guide to building a complete computer game in Python. You'll learn programming fundamentals like loops, strings, and lists as you build Escape!, an exciting game with a map to explore, items to collect, and tricky logic puzzles to solve. As you work through the book, you'll build exercises and mini-projects, like making a spacewalk simulator and creating an astronaut's safety checklist that will put your new Python skills to the test. You'll learn how to use Pygame Zero, a free resource that lets you add graphics and sound effects to your creations, and you'll get useful game-making tips, such as how to design fun puzzles and intriguing maps. Before you know it, you'll have a working, awesome game to stump your friends with (and some nifty coding skills, too!).

You can follow this book using a Raspberry Pi or a Microsoft Windows PC, and the 3D graphics and sound effects you need are provided as a download.

ARDUINO for BEGINNERS ESSENTIAL SKILLS EVERY MAKER NEEDS Loaded with full-color step-by-step illustrations! Absolutely no experience needed! Learn Arduino from the ground up, hands-on, in full color! Discover Arduino, join the DIY movement, and build an amazing spectrum of projects... limited only by your imagination! No "geekitude" needed: This full-color guide assumes you know nothing about Arduino or programming with the Arduino IDE. John Baichtal is an expert on getting newcomers up to speed with DIY hardware. First, he guides you gently up the learning curve, teaching you all you need to know about Arduino boards, basic electronics, safety, tools, soldering, and a whole lot more. Then, you walk step-by-step through projects that reveal Arduino ' s incredible potential for sensing and controlling the environment-projects that inspire you to create, invent, and build the future! · Use breadboards to quickly create circuits without soldering · Create a laser/infrared trip beam to protect your home from intruders · Use Bluetooth wireless connections and XBee to build doorbells and more · Write useful, reliable Arduino programs from scratch · Use Arduino ' s ultrasonic, temperature, flex, and light sensors · Build projects that react to a changing environment · Create your own plant-watering robot · Control DC motors, servos, and stepper motors · Create projects that keep track of time · Safely control high-voltage circuits · Harvest useful parts from junk electronics · Build pro-quality enclosures that fit comfortably in your home

Projects for Extending MINDSTORMS NXT with Open-source Electronics

The LEGO Zoo

The Unofficial Guide to Lego Mindstorms Robots

Extreme NXT

Code a Space Adventure Game!

Build and Program Your Own LEGO Mindstorms EV3 Robots

A children's book that shows how to build 50 simple models of LEGO animals using only standard LEGO parts that every LEGO fan has in their collection. The LEGO Zoo book shows kids of any age how to build 50 simple animal models using only standard LEGO parts that are already likely to be in their collection. You'll learn how to build models of animals like crocodiles, zebras, wolves, lions, flamingos, plus many more. Projects are ordered by increasing difficulty making it easy to jump in without getting in over your head. The animals are so cute and goofy, whether building as a family or solo The LEGO Zoo is sure to deliver a roaring good time!

Unlock the secrets to creating random mazes! Whether you're a game developer, an algorithm connoisseur, or simply in search of a new puzzle, you're about to level up. Learn algorithms to randomly generate mazes in a variety of shapes, sizes, and dimensions. Bend them into Moebius strips, fold them into cubes, and wrap them around spheres. Stretch them into other dimensions, squeeze them into arbitrary outlines, and tile them in a dizzying variety of ways. From twelve little algorithms, you'll discover a vast reservoir of ideas and inspiration. From video games to movies, mazes are ubiquitous. Explore a dozen algorithms for generating these puzzles randomly, from Binary Tree to Eller's, each copiously illustrated and accompanied by working implementations in Ruby. You'll learn their pros and cons, and how to choose the right one for the job. You'll start by learning six maze algorithms and transition from making mazes on paper to writing programs that generate and draw them. You'll be introduced to Dijkstra's algorithm and see how it can help solve, analyze, and visualize mazes. Part 2 shows you how to constrain your mazes to different shapes and outlines, such as text, circles, hex and triangle grids, and more. You'll learn techniques for

culling dead-ends, and for making your passages weave over and under each other. Part 3 looks at six more algorithms, taking it all to the next level. You'll learn how to build your mazes in multiple dimensions, and even on curved surfaces. Through it all, you'll discover yourself brimming with ideas, the best medicine for programmer's block, burn-out, and the grayest of days. By the time you're done, you'll be energized and full of maze-related possibilities! What You Need: The example code requires version 2 of the Ruby programming language. Some examples depend on the ChunkyPNG library to generate PNG images, and one chapter uses POV-Ray version 3.7 to render 3D graphics.

This book teaches anyone interested how to build LEGO MINDSTORMS robots. The author starts with an easy robot and gets to more detail in the succeeding six robots built in the book. The robots he presents are award winning robots, so he is giving away his secrets. The author also teaches how to program the robots. If you are not a programmer, then you can use the code provided. He tells you what equipment you need and how to get it inexpensively. So everything is discussed that you will need to create these robots or modify his designs to create your own. You truly experience the technology in action as you create your robots.

A collection of 16 fascinating scientific and technical projects to build with parts from the LEGO MINDSTORMS EV3 robotics set and other components. A great addition to any STEM curriculum or home library. High Tech LEGO® hijacks the MINDSTORMS® EV3 revolution, showing you how to build creative technical inventions with practical applications. You'll learn to build a dynamic array of working devices for outdoor research, home security, spycraft, and more. Among the book's 16 fascinating projects you'll find a motion-activated animal cam, a Morse code transmitter, a laser security fence, a motion-sensing radar detector, an automated insect trapper, and a heat-seeking infrared cannon. Welcome to a whole new world of building! Every project brings together science, mechanics, electronics, optics, and software to create complex instruments for studying and measuring the world around you, all while maintaining the playfulness of LEGO. Each easy-to-follow model combines illustrated instructions with step-by-step guidance on the engineering methods at play. As you build, you'll learn: "Illegal" modding techniques (that may include drilling, cutting and soldering -- Shh!) Different ways to work with diode laser modules Tricks for modifying EV3 sensors and motors The joy of hacking LEGO light bricks to make a flickering fireplace How to use MINDSTORMS to build your own contraptions! Experiment on your own, and expand on your finished creations. Make a few adjustments so the Critter Cam triggers an alarm to scare away pests, or modify the Doppler radar to detect flammable gases. The possibilities are endless! REQUIREMENTS: LEGO® MINDSTORMS® EV3 Home Edition Windows Vista or higher macOS 10.14 or earlier
Code Your Own Twisty Little Passages