

(Download pdf) The LEGO MINDSTORMS NXT 2.0 Discovery Book: A Beginner's Guide to Building and Programming Robots

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Laurens Valk

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#386703 in Books Valk, Laurens 2010-04-01 2010-04-01Original language:EnglishPDF # 1 10.00 x .79 x 8.00l, 1.65 #File Name: 1593272111320 pages | File size: 43.Mb

Laurens Valk : The LEGO MINDSTORMS NXT 2.0 Discovery Book: A Beginner's Guide to Building and Programming Robots before purchasing it in order to gage whether or not it would be worth my time, and all praised The LEGO MINDSTORMS NXT 2.0 Discovery Book: A Beginner's Guide to Building and Programming Robots:

145 of 147 people found the following review helpful. Take the NXT StepBy Richard P. MurnaneI (a hardware/software developer and radio ham for some 30 years) bought LEGO Mindstorms for my now eight-year-old son last Christmas. Being a LEGO nut since he was old enough not to swallow the pieces, he's had great fun with Mindstorms since then.But after you've built the models detailed in the Mindstorms kit, where do you go next? The Mindstorms online help is pretty good, but tiresome to read on the screen, and not the best medium for a youngster. The Alpha Rex etc. are impressive but it's hard for a child to try to make his own models of a similar complexity on

the basis of the models in the Mindstorms kit. There is a huge gap between copying ready-made models and learning to create real robots from scratch, and Laurens Valk's book fills that gap perfectly. As "the missing manual", this book thoroughly explains the NXT hardware and NXT-G software, in enough technical detail to satisfy a seasoned programmer like me, but without overloading someone who is completely new to the technology. That is no mean feat! The building instructions are of a similar quality to those provided in the all-too-slim Mindstorms manual, and my son was able to follow them and the programming instructions with only minimal guidance from me (usually because we hadn't yet read the accompanying text! :-). Now, there are several ways to approach this book. To get started quickly, you or your child genius can simply follow the detailed building and programming instructions to create any of the eight robots detailed in the book. My son had almost no trouble doing this: in fact, he first went after the more complex models like the Strider featured on the cover, followed by the very impressive Chimney Climber. If, like us, you're new to the LEGO Technic and Mindstorms systems, you'll be surprised how they can be made to do such remarkable things. The program instructions feature a simplified overview - essentially a flow diagram - that lets you follow the basic structure of the program and learn about loops, "if-then-else" blocks, etc. Your young robotics engineer can learn about the how-and-why of the programs, and gradually improvise to deepen his/her understanding of what the NXT controller is "thinking", and then devise clever ways to change it. Then there are the challenges, or "discoveries" to use Laurens' word: 87 of them in all. Once we have settled down to reading the book together start-to-finish (give us a chance, we've only had this book for a week!), the discoveries will provide many new paths to explore and consolidate our understanding of robotic systems. I would have expected to pay three times what is charging for this book, based on similar books aimed at software developers. At under \$20, it is excellent value for money and an essential "NXT" step on any robot designer's path of discovery. Buy it!

8 of 8 people found the following review helpful. Great tool for my 9 year old robotic beginner

By Customer I purchased this book to encourage my 9 year old son to explore the robot he and his sister had received as a gift. Although my 11 year old daughter was trained in basic building and programming of the robot through a semester-long middle school robotics class, my inexperienced son felt overwhelmed by the task and confused by the programming. This book has been helpful and encouraging for him. We started the book together so I could ensure he understood the format of the book and the types of terms used. Though I expected the book would need to be a mother/son project, he quickly was able to read the sections and complete the programming tasks on his own. Each section gave him a simple task to learn the basic programming, then a challenge or two to figure out on his own using the programming skills he was mastering. In this first part of the book, he is able to complete two or three challenges before getting tired of trial and error (for example, to determine the correct degrees of axle rotation to make the robot turn 180 degrees) or bored with the robot. This takes him 20 to 45 minutes (including the time it takes to demonstrate the robot's new skills for me), depending on the challenges he is completing. By the end of the third chapter he was designing "tasks" for the robot to complete and planning his own simple programs. At 9, he is able to build the robots in this book by himself or with very minor assistance. He is also using his newly developed skills to plan small modifications to the basic robot designs in the book, but not creating robots alone. He is not yet at the second half of the book (robot designs and programs increase in complexity as the book progresses), but the style of the directions for building the robot are the same regardless of the complexity of the robot, so I do not foresee any difficulties there. As for reading difficulty, my son received this book the summer between 4th and 5th grade. He reads at grade level only when forced to read (he hates reading), and he is able to be successful with this book without reading help. Because it is a book about programming a robot the reading skills must be coupled with a basic grasp of math and science concepts for the child to be successful on his/her own. The explanations of basic programming terms are simple, for example a "switch block" is used when the robot has to make a decision. Yet, from the beginning, programmers must be able to understand the difference between rotation of the axles and rotation of the robot; must be able to understand concepts of distance, degree of rotation and how power level affects speed; must comprehend the sequence of events in the program is as important as the events in the program. Most of the programming is done through the challenges, so the child designs the program themselves. These are generally adaptations of the samples, but do not expect pages of programs to key in to make a robot do cool things. The programmer is expected to learn the programming and be able to put the individual pieces together, in the correct order, on their own. My son may have been able to understand most of the technical knowledge a year earlier, however he would have struggled with the reading of the words in the book and had no patience for the work it takes to program. My daughter has not shown interest in the book yet, however she pays attention to the programs her brother tries and says she intends to program with him when he reaches the part of the book that teaches her new things too.

10 of 10 people found the following review helpful. This is the book I needed a year ago!

By Claire Horncastle My eight year old son was invited to go to an FLL demonstration last August, he loved it so I inquired about the nearest team for him to join. It turned out to be me and I ended up coaching not one but two of the 23 teams entered in New Zealand's first ever FLL tournament! I knew absolutely nothing about NXT so had a VERY steep learning curve. The Help on the NXT software is great - if you know what you are looking for. I struggled for 4 months to upskill myself enough to help the kids answer their questions. I must have been partially successful in that one of my teams won the NZ competition and qualified for Atlanta. Atlanta was awesome but only made me realise

how little I know and how much more I have got to learn. My team is determined to get to St Louis next year and this marvellous book will help us on the way. This book doesn't assume you know anything about NXT but also takes you far beyond what my team needed to know to get to Atlanta. It is not just a beginner's guide. If you are totally new to NXT or self-taught like me then this is the book for you. I got it two days ago and have already read through it once. My 9 year old son is also reading it and keeps saying "Did you know....." A must have for anyone who is new to NXT or knows a bit and is wanting to move beyond basic programming. When is the next book coming out Laurens?

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.-

"The LEGO MINDSTORMS NXT 2.0 Discovery Book should come with every MINDSTORMS NXT 2.0 Kit." -- GeekDad, Wired.com About the Author Laurens Valk is a member of the MINDSTORMS Community Partners who help test and develop new NXT products. He has been inventing robots with the MINDSTORMS NXT sets since their introduction, and one of his robot designs appears on the NXT 2.0 packaging. Valk is a co-author of LEGO MINDSTORMS NXT One-Kit Wonders (No Starch Press) and a contributor to The NXT Step Blog (thenxtstep.blogspot.com). He lives in the Netherlands where he studies Mechanical Engineering at Delft University of Technology.