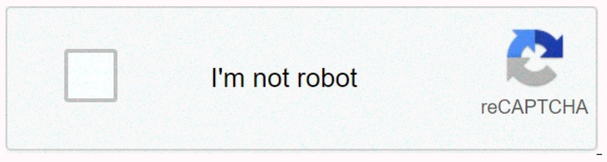

Continue

Robotics merit badge pamphlet

The robotics badge, brochure and kits were released by the BSA on April 12, 2011. Security. Do each of the following: Explain to your advisor the most potential risks you may encounter when working with robots and what you need to do to anticipate, mitigate and prevent, and respond to, and respond to. Describe the appropriate safety tools and clothes to be used when working with robotics. Discuss first aid and prevention for the types of injuries that could occur when participating in robotics activities and competitions, including cuts, eye injuries, and burns (chemicals or heat). Robotics industry. Discuss the following with your consultant: The kinds of things robots can do and how robots are best used today. The similarities and differences between remote control vehicles, telerobots, and autonomous robots. Three different methods robots can use to move in addition to wheels or pieces. Describe when it would be advisable to use each method. General knowledge. Discuss with your advisor three of the five main areas of robotics (human-robot interface, mobility, manipulation, programming, sensors) and their importance for the development of robotics. Discuss either the three fields related to a single robot system or talk about each domain in general. Find pictures or at least one video to help your conversation. Design, construction, program, testing. Do each of the following: With your consultant's approval, choose a task for the robot or robotic subsystem you plan to create. Include feedback and sensor programming at work. Document this information in the robot engineering notebook. Design your robot. The robot's design should use sensors and programming and have at least 2 degrees of freedom. Document the design in your robot engineering notebook using drawings and a written description. Create a robot or robotic subsystem of your original design to complete the task you selected for requirement 4a. Discuss with your advisor the programming options available for your robot. Then select either option 1 or option 2. Option 1. Program your robot to perform the task you selected for your robot in 4a. Include a sample of your program's source code in the robot engineering notebook. Option 2. Prepare a flowchart of the desired steps to program your robot to complete the task in 4a. Include procedures that display activities that sensor inputs. Place this in your robot engineering notebook. Test your robot and record the results in your robot engineering notebook. Include suggestions on how you could improve your robot, as well as images or sketches of your final robot. Prove. Do the following: Show your consultant the robot you built in requirement 4. Share your robot engineering notebook with your consultant. Talk about how well your robot has completed the task, the improvements you will make to your next project, and you learned about the planning process. Competitions. Do one of the following. Watch a robotics competition and tell your consultant what you saw and learned about the competition and how teams are organized and managed. Learn about three youth robotics competitions. Tell your advisor about them, including the type of competition, time commitment, age of participants, and how many teams participate. Career. Name three career opportunities in robotics. Pick one and learn the education, training and experience required for this profession. Discuss this with your consultant, and explain why this profession may interest you. BSA Addition ID#: 146 Requirements last updated at: 2011 Booklet publication number: 35972 Brochure Stock (SKU) Number: 612017 Booklet Review Date: 2016 Page updated on: November 28, 2017 Acquiring the Robotics Value Mark requires a Scout to understand how robots move, to feel the environment and understand what to do. Buy the brochure Download a workbook Printable requirements REQUIREMENTS 1. Security. Do each of the following: a. Explain to your advisor the most potential risks you may encounter when working with robots and what you need to do to anticipate, mitigate and prevent, and respond to, and respond to. Describe the appropriate safety tools and clothes to be used when working with robotics. B. Discuss first aid and prevention for the types of injuries that could occur when participating in robotics activities and competitions, including cuts, eye injuries, and burns (chemicals or heat). 2. Robotics industry. Discuss the following with your advisor: a. The kinds of things robots can do and how robots are best used today. B. The similarities and differences between remote control vehicles, telerobots, and autonomous robots. c. Three different methods robots can use to move in addition to wheels or tracks. Describe when it would be advisable to use each method. 3. General knowledge. Discuss with your advisor three of the five main areas of robotics (human-robot interface, mobility, manipulation, programming, sensors) and their importance for the development of robotics. Discuss either the three fields related to a single robot system or talk about each domain in general. Find pictures and/or at least one video to help your conversation. 4. Design, construction, program, test. Do each of the following: a. With your consultant's approval, select a task for the robot the robotic subsystem you intend to create. Include feedback and sensor programming at work. Document this information in the robot engineering notebook. B. Design your robot. The robot's design should use sensors and programming and have at least 2 degrees of freedom. Document the design in your robot engineering notebook using drawings and a written description. c. Create a robot or robotic subsystem of your original design the task you selected for requirement 4a. d. Discuss with your advisor the programming options available for your robot. Then select either option 1 or option 2. (1) Option 1. Program a robot to perform the task you selected for your robot in 4a. Include a sample of your program's source code in the robot engineering notebook. (2) Option 2. Prepare a flowchart of the desired steps to program your robot to complete the task in 4a. Include processes that display sensor input-based activities. Place this in your robot engineering notebook. Q. Test your robot and record the results in your robot engineering notebook. Include suggestions on how you could improve your robot, as well as images or sketches of your final robot. 5. Show. Do the following: a. Show your consultant the robot you built in requirement 4. B. Share your robot engineering notebook with your consultant. Talk about how well your robots completed the project, the improvements you'll make to your next design, and what you learned about the design process. 6. Competitions. Do one of the following: a. Watch a robotics competition and tell your advisor what you saw and learned about the competition and how teams are organized and managed. B. Learn about three youth robotics competitions. Tell your advisor about them, including the type of competition, time commitment, age of participants, and how many teams participate. 7. Careers. Name three career opportunities in robotics. Pick one and learn the education, training and experience required for this profession. Discuss this with your consultant, and explain why this profession may interest you. RESOURCES The robotics value sign brochure and the new interactive digital value token brochure are filled with resources to help you learn about robots. Here's a sample of what you can find in these brochures: What qualifies as a robot for the Robotic Merit Badge? What are Degrees of Freedom? Robotic Safety and First Aid This video can help you get started with Requirement 1. Methods Robot Use to Move This Video can help you get started with the 2c requirement. Careers in Robotics This video can help you get started with requirement 7. FIND A KIT ROBOTIC Kit Robot Kits available through the BSA will meet the needs of Robotics value signal requirements. Your local council, robot club, museum or university may also be able to help you. Where to buy Resources kit in your community ASK AN EXPERT Do you have a question about robotics? Stuck on a technical issue you can't understand? Experts Tarek Sraibatti, Rick Tyler and Kenneth Berry are here. More >> FUN STUFF Watch videos of cool robots Laughing at funny funny robots | Send us your jokes ROBOTICS WHO Professor James Conrad served on the team that helped develop the requirements for the Robotic Merit Badge (but was able to help write write due to time constraints). He has led several Robotic Merit Badge camps and has helped other consultants lead their activities. Here are some resources for scouts and consultants: Here's a sample of an engineering notebook from a UNC Charlotte student. It shows how the design of their robot, a garbage collection of autonomous vehicles, changed over time. Here are some examples of computer engineering scouts used to complete value signal requirements: Example 1 Example 2 Example 3 Example 4 Here is a PowerPoint presentation by Marilyn Farrand on requirements 1 through 3. Many photos are borrowed - please keep in mind that they are from free photos on the internet and the photos belong to their respective owners. Here are some resources for consultants only: I found it very useful to require scouts to read the value mark book first, then take a preliminary test to prove that they are reading the book. Scouts who read the book are better value signal participants! Consultants should contact me directly to get a copy of the pretest (jmconrad@uncc.edu) Read more about robotics on Dr. Conrad's websites: This page is maintained by James Conrad - last modified 2012-05-17. Copyright 1994-2012 James M. Conrad. All rights reserved. The robotics badge, brochure and kits were released by the BSA on April 12, 2011. Security. Do each of the following: Explain to your advisor the most potential risks you may encounter when working with robots and what you need to do to anticipate, mitigate and prevent, and respond to, and respond to. Describe the appropriate safety tools and clothes to be used when working with robotics. Discuss first aid and prevention for the types of injuries that could occur when participating in robotics activities and competitions, including cuts, eye injuries, and burns (chemicals or heat). Robotics industry. Discuss the following with your consultant: The kinds of things robots can do and how robots are best used today. The similarities and differences between remote control vehicles, telerobots, and autonomous robots. Three different methods robots can use to move in addition to wheels or pieces. Describe when it would be advisable to use each method. General knowledge. Discuss with your advisor three of the five main areas of robotics (human-robot interface, mobility, manipulation, programming, sensors) and importance for the development of robotics. Discuss either the three fields related to a single robot system or talk about each domain in general. Find pictures or at least one video to help your conversation. Design, construction, program, testing. Do each of the following: With your consultant's approval, choose a task for the robot or robotic subsystem you plan to create. Include feedback and sensor programming at work. Document this information in the robot engineering notebook. Design your robot. The design of the robot should use sensor sensors and have at least 2 degrees of freedom. Document the design in your robot engineering notebook using drawings and a written description. Create a robot or robotic subsystem of your original design to complete the task you selected for requirement 4a. Discuss with your advisor the programming options available for your robot. Then select either option 1 or option 2. Option 1. Program your robot to perform the task you selected for your robot in 4a. Include a sample of your program's source code in the robot engineering notebook. Option 2. Prepare a flowchart of the desired steps to program your robot to complete the task in 4a. Include processes that display sensor input-based activities. Place this in your robot engineering notebook. Test your robot and record the results in your robot engineering notebook. Include suggestions on how you could improve your robot, as well as images or sketches of your final robot. Prove. Do the following: Show your consultant the robot you built in requirement 4. Share your robot engineering notebook with your consultant. Talk about how well your robots completed the project, the improvements you'll make to your next design, and what you learned about the design process. Competitions. Do one of the following. Watch a robotics competition and tell your consultant what you saw and learned about the competition and how teams are organized and managed. Learn about three youth robotics competitions. Tell your advisor about them, including the type of competition, time commitment, age of participants, and how many teams participate. Career. Name three career opportunities in robotics. Pick one and learn the education, training and experience required for this profession. Discuss this with your consultant, and explain why this profession may interest you. BSA Ad Promotion#: 146 Requirements last updated at: 2011 Brochure publication number: 35972 Brochure Stock (SKU) Number: 612017 Booklet Review Date: 2016 Page updated on: November 28, 2017 2017