

B.S. in Computer Science with a Concentration in Robotics Programming

Learning Outcomes

After successfully completing this program, students will be able to:

1. Describe the impact of robotics in today's society.
2. Explore the broad scope of technology application in support of robotic development.
3. Demonstrate technology application and integration skills.
4. Develop autonomous robotic algorithms to achieve challenging tasks.
5. Integrate sensors into programming algorithms.
6. Develop robotics architectural thinking: breaking problem into pieces, prioritize and modularize.
7. Program on the "Robot Operating System", ROS.
8. Demonstrate advanced algorithmic understanding using the context of robotics.
9. Demonstrate understanding of the key concepts of ROS, nodes, topics, commands.
10. Know how to use artificial intelligence to make decisions within robotic programs.
11. Demonstrate a knowledge of different aspects of machine learning.
12. Demonstrate a knowledge of principles of creating machine learning applications.
13. Understand (on a high level) various machine learning algorithms, the pros and cons of each, and how to apply them to data.
14. Have a broad understanding of the natural language processing field.
15. Be able to identify different natural language processing technologies and be able to select the one that is needed for a particular robotics application by knowing the advantages, disadvantages, capabilities, and limitations of these different technologies.
16. Be able to use different natural language processing libraries and integrate them in a final robotics product.