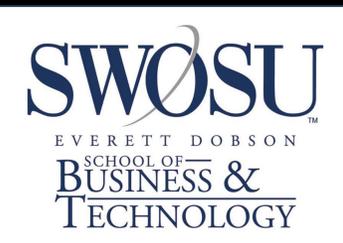




# A Brief Literature Review for Machine Learning in Autonomous Robotic Navigation



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## Overview

Machine learning is becoming very popular in many technological aspects worldwide, including robotic applications. One of the unique aspects of using machine learning in robotics is that it no longer requires the user to program every situation. The robotic application will be able to learn and adapt from its mistakes. In most situations, robotics using machine learning is designed to fulfill a task better than a human could, and with the machine learning aspect, it can function at the highest level of efficiency and quality. However, creating a machine learning program requires extensive coding and programming knowledge that can be difficult to learn for the user.



## Objectives

- Use Pixhawk autopilot systems, Arduino control boards, Raspberry Pi mini-computer, a GPS, and numerous other sensors and hardware to work together with machine learning to make an autonomous vehicle.
- Find the maximum speed we can go without outrunning the sensors
- Obstacle collision avoidance
- Speed control
- Heat recognition & protection

## Sensor equipment

- Raspberry Pi
- Pixhawk autopilot system
- Arduino control board
- GPS

## Project Future

- Iterate on data collection method
- Deploy in different environments
- Autonomous robotic competitions

## Conclusion

In conclusion, we still have time to finish the robot, and many other pieces must fall into place to be a functioning and competitive robot. However, we have solved many software problems and can now begin using machine learning to gather the necessary data to analyze and understand more about the robot.