Design Proposal

# Abstract

Presented here is the design of a novel two wheel robot capable of competing in the 2013 ENPH 253 robot competition. The robot is designed to collect squash balls and shoot them at targets as accurately and quickly as possible. In accordance with the competition rules, the robot is designed to fit inside a 300mm3 cube and operate autonomously for at least 90 seconds. The robot will be able to follow tape at up to 0.8m/s and shoot squash balls at 5-8m/s.

A lightweight spinning brush sweeps balls into a holding ramp for collection. The robot has two rear wheels that can be independently steered by two servo motors and two ball casters mounted at the front. This wheel configuration allows the robot to navigate with differential steering as well as granting the ability to strafe horizontally against a wall. Several chassis mounted reflectance sensors are utilized to track the location of black tape which is used for navigation.

The robot is controlled by the ubiquitous ATMega128 based Wiring board using code written in the Wiring language and Wiring IDE.