Daily Log

Monday February 24

Worked on creating lists from training data. The problem we are currently working on is syncing up the lidar points to the two movement outputs. We found a lambda function online to find the closest time in a list to a given time.

Wednesday February 26

Wrapped up work on the data cruncher. This is called crunchdata.py on our Github. I made the data uniform by cutting down every cycle to 360 (theta, distance) points. The end result is a list of 360 pairs of (theta, distance) tuples followed by two integers, the two outputs we want. When we feed the data through the neural net we might have to do some additional processing.

Friday February 28

Began setting up the car to train data. We will use a big battery bank to power the Pi and LIDAR sensor. We spent today figuring out how to place items such as the battery bank, Pi, and Arduino inside the car. The LIDAR sensor also fell off the top, so we hot glued it back on.

Timeline

Date	Goal	Met
Today minus 2 weeks	Make the collection of data wireless using the XBees	Yes
Today minus 1 week	Control the car wirelessly using our controller	Yes
Today	Gather training data	No
Today plus 1 week	Format training data to work with the neural network and gather more training data	No
Today plus 2 weeks	Gather more training data and have the model converge	No

Reflection

Our ESC control is still relatively imprecise, we tried reprogramming the ESC, and it fixed the deadzone issue, but not the jittery nature of its signal. Despite this, we have elected to move forward with the project, taking into consideration our time constraint. We have worked hard to have a successful and reliable data gathering methodology, but our current task is to gather enough data, have the model converge, and then create a system for evaluating the model in real-time in the next 1-2 months.

We expect the following grades for the listed accomplishments:
A – Will have a car that navigates a hallway corridor autonomously, detailed GitHub with launch instructions, a detailed final paper that describes the math behind our neural network and a strong TJ star presentation
B– A car tries to navigate a hallway autonomously with a record of solid work throughout the year; detailed git hub, detailed final paper, strong presentation
C – attempts to do research and write a program; a git hub site, final paper, presentation