Pony Car Showdown

New Mexico
Supercomputing Challenge
Final Report
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Team Number
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Executive Summary

In our project we set out to find the true victor between two breeds of pony cars. We created a project in the language of NetLogo to do so. We have created a race track and implemented these two vehicles into NetLogo in which we have entered the basic specifications of the vehicles. We will be able to modify the track so that we can add tighter curves and long straightaways or wide curves and short straightaways. We basically have added two turtles into NetLogo and like I said added the specifications of the Camaro and the Mustang into each turtle. Then we implemented them onto our track we have created to see which one does best on the track.

Problem Statement

We have tested both of these cars on Net Logo with the specs of both vehicles to do our own pony car challenge without real cars. Both the Camaro and the Mustang have been rivals since 1967. When ford introduced the Mustang to the world Chevrolet needed to create a car similar to that style to beat their rival. Thus the creation of the Camaro which lead to one of the biggest car feuds ever. They each came out with different models: for the Camaro they added the 1SS, 2SS, SS 1LE, RS, Z/28, and ZL1. For the Ford Mustang they added GT, Shelby GT500, Shelby, Boss 302, and Fastback. They have each been tested in many different ways by professionals and amateur drivers and each has won many different times. There are two packages that are supercharged from the manufacturer that we are using for our project. These packages are the Camaro ZL1 and the Mustang Boss 302. These cars are both barely street legal and are built for racing. They were both taken form the stock packages Camaro SS and Mustang GT. The manufacturers then added modifications to their cars that would help when racing. This is why we choose these two cars for our project because they are the best racing package form each manufacturer. We have made these two turtles that work with their specifications on the track we have created for NetLogo.

Method / Programming:

For the track on Net Logo all that we did was take an overview picture of a track, outlined it into paint, and added it into Net Logo. We could not use the regular image of the track in Net Logo so we blacked out the track and gave the image a white background. Our team is currently working on adding the cars to Net Logo. We are tried to add a 3D overview image of each car, but have encountered bugs while trying to enter the image into NetLogo. Our code will tell the turtles to stay on black so they don't go off the track. We have allowed the cars to slow down when they get to the edge of the track just like a racer would if he were to get near the edge of the track. Like it was describe in the last paragraph we will can alter the track to have tighter turns to test the turning ability of each car. The Camaro ZL1 uses a magneto-rheological shocks. With the magnetic field this allow the particles to align. This lowers the vehicle to reduce its center of gravity for improved braking and handling. The Mustang Boss 302 has a 444 horsepower 5.0 liter V-8 engine. The Camaro ZL1 has a 580 horsepower 6.2 liter aluminum block V-8 engine. Due to the magneto-rheological shocks the Camaro can handle the turns better than the Mustang. The mustang has a better take off time than the Camaro so once it comes out of a turn it can accelerate faster than the Camaro but with the Camaro's engine it can still keep up. Thus once we implement these specs into our turtles this will prove which one wins.

Results and Products / Conclusion / Achievements / Validation:

When we have our program finished we want to find the victor of the two rival muscle cars. When we added these cars to the track and tamper with the track we are expecting to see the Camaro overtake the Mustang on curves and the Mustang come ahead on the straights of the track. We have learned with this project to use NetLogo because it enables more option for the type of project we are modeling. The result of our project is realistic and has been tested many times on real world tracks by many

different professional drivers. We have compared this project to the specifications of each car from the car manufacturers. The Camaro ZL1 has an aluminum block 580 horsepower 6.2 liter V-8 engine with a 6 speed manual tremic transmission with 556 ft.-lbs of torque. The Mustang Boss 302 has a 444 horsepower 5.0 liter V-8 engine with a 6 speed manual transmission and 380 ft.-lbs of torque.

Citations / Acknowledgements:

Our science teacher, who is also our project mentor, has helped with this project and helped implement the track and specs of the cars. We got most of our information from http://www.chevrolet.com/camaro-zl1-sports-car.html for the Camaro and http://www.ford.com/cars/mustang/trim/boss302/ for the Mustang. We were also helped with the idea of our project by our science teacher. Last year our project was on aerodynamics and this year we were interested in doing a projects on muscle cars. We choose our personal favorite the Camaro vs. the lifelong rival the Mustang. Which gave us the idea of adding a track to star logo to test them. We researched the project thoroughly and had a general idea of what the vehicles would do from watching videos of the cars being tested on a real world track.