Team Name: Retrofit Car

- **List of team members (5 maximum):**

Nathan Campeau

Freddie Feliciano

Josue Guerra

John Healy

Wesley Simpson

- **Brief Project Description:**

1-2 paragraphs describing what problem you are solving and what your project does.

What if you drive an older vehicle and wish that you could have some of the features on newer cars? Our solution is a new UI system/display that is touch-enabled and that collects all the important performance metrics all in one place. With additional sensors placed on the vehicle, the UI system will be able to collect and display data that is important for the user, like coolant temperature, proximity sensor, etc. This system could be safety-oriented or performance-oriented, which will determine what kinds of sensors are used and what metrics are displayed on the UI system.

- List the **top 5** features that you are planning on demonstrating at the end of next semester.
    - If we make a safety-oriented system:
        - UI display on touchscreen
        - blind spot/proximity sensor; UI will alert if another vehicle is in the blind spot.
        - back-up camera; the UI system will activate a rear-facing camera on the screen as you put the car in reverse.
        - gyro sensor; can detect if the car flips and potentially trigger an automatic distress call (potentially with GPS location as well)
        - outside temperature; sensor that measures the outside temperature.
    - If we make a performance-oriented system:
        - UI display on touchscreen
        - accelerometer; can measure the speed of the vehicle and have it displayed on the UI display.
        - automatic calculation of gas milage
        - coolant temperature sensor for the engine; sensor for engine temperature.

- <mark>tire pressure; additional sensors for tire pressure that can be displayed on UI.</mark>

- **Technology Analysis:**

There will likely be several technologies that will be necessary to complete your project. List any key technologies and show that they are available, affordable, and accessible. Note that each team's budget will be on the order of $500 (depending on the final number of teams, team size, etc.). By accessible, I want you to show that you can reasonably incorporate the technology into your design.

technology	link/info	cost
Touch screen	screen (from Amazon). can be controller by Raspberry pi or HDMI	$45
Raspberry Pi	Pi (from Amazon), was listed with Touch Screen, is in-stock. maybe substitutable for other microcontroller if needed	$61 - note that there could be cheaper viable alternatives for
accelerometer/gyrosensor	3-axis accelerometer from digikey is in-stock	$18
gps	GPS sensor from amazon, is in-stock	$13
camera	camera from Mousser is in-stock and compatible with USB/raspberry pi	$10
ultrasonic sensor	This module has a long range of about 21 feet. There are cheaper options on Digikey and amazon which don't extend as far. Further consideration needed to determine appropriate distance and	up to $30

	degree	
temperature sensor	many sensors available (such as <u>this</u>) that can withstand high temperatures	$10

General Feedback (from Schafer):

It appears that there is enough there for a project. You can proceed to develop a complete proposal.

Specific Feedback:

1.   Have you thought about how you will test and demonstrate this project?
2.   It isn't clear to me, given the sensors listed, how you will determine gas mileage.