ROBT206 Microcontrollers with Lab Final Project Proposal	**Spring 2017**
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School	SST, 2nd year Computer Science
Project Title	Obstacle Avoiding Robot Car [Name is to be decided]

Project Description

For implementing the project the following equipment is necessary:

- Arduino Board
- VEX/Lego Mindstorms robot set (wheels/constructor details are needed to make the body of the car)
- 3 proximity sensors (one to measure the distance between the car and the obstacle which is in front of it, and other 2 are for left and right sides)
- 2 infrared sensors (one on the car, another on the remote controller, so that the car can be driven by the remote)
- On/Off switch (for powering the robot)
- Automatic/Manual Mode switch (to change to either Automatic or Manual modes)
- 3 buttons (Left/Right/Forward, which move the car accordingly)
- Photoresistor (for changing the speed of the car)

The aim of the project is to make the Robot Car, which can ride through complicated roads. To assemble the car, the VEX/Lego Mindstorms will be used to construct the body of the car. The car can either drive itself (Automatic Mode) or be controlled by the remote (Manual Mode). The remote has 3 buttons (Left/Right/Forward), 2 switches (On/Off, Automatic/Manual Mode) and the Photoresistor. The car and the remote will be communicating with each other via infrared sensors (remote controller will send IR signals, and the car will receive them).

Automatic Mode: the car always rides forward, until it is faced with an obstacle, that is detected by the proximity sensor in the front. Then the car stops and checks the obstacles with proximity sensors on the left and right sides. The car chooses the direction, where the obstacle is farther away and turns to that direction. After that it continues moving forward until another obstacle. The car keeps moving, unless we change the mode or turn off the robot.

Manual Mode: in this mode, the car can be controlled by the remote. The On/Off switch allows the user to turn on/off the car. The Automatic/Manual Mode switch allows the user to switch between two above described modes. Forward button, while it is being pushed will move the car forward. Left/Right buttons will rotate to the according sides until the button is released. The Photoresistor is needed for setting the speed with which the car is going to move.

Additional features might be added along the implementation of the project.

Approved ☐ Not Approved ☐