ECE 544 Final Project Proposal

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Project Description:

For this project, we want to build a car which can move forward, backward, turn left and turn right. There are two motors within the car. One of the motor is used to drive the car and another motor is used to control the turning of the car. The control signals are getting from Android App by using database across WiFi. Players can use App to control the movement of the car. A Led will glow and a message “danger” will show up if the car is near some barriers with the help of HC-SR04 distance sensor. We will add Pmod WiFi module to Nexys 4 DDR board. We will make our WiFi IP and include that in our embedded system. We will buy some car model online and make some adjustments. The power is getting from external battery bank.

Project Goals:

1. Write PMOD Peripheral for Wifi Module
2. Assemble the car bought from Amazon
3. Write an Android App to control the motion of the car and send a feedback to LEDs using database showing the direction of the car movement
4. Distance sensor to detect the obstacles in front

Technical Specifications:

Hardware:

1. 2- DC Motor
2. Nexys 4 DDR
3. Car
4. Wifi Module
5. Android Phone
6. Android App
7. Distance Sensor

Software:

1. Vivado SDK
2. Android Studio SDK

Demonstrate Success

We will follow our milestones to make some progress. Also, each members will do different works at the same time and we will integrate all of our parts early to make sure the success. Our final goal is that users can use the Android App to control the movement of the car. If we run out of time, we will not implement the distance sensor part and we will only achieve the functions to control the car.

Milestones:

1. Write PMOD Peripheral for Wifi Module: by 05/29
2. Assemble the car bought from Amazon: by 05/29
3. Write an Android App to control the motion of the car and send a feedback to LEDs using database showing the direction of the car movement: by 05/29
4. Distance sensor to detect the obstacles in front: by 05/29
5. Create the embedded system for the project and test each part: by 06/03
6. Implement software to control the car and sensors: by 06/08