

COE 485: Senior Design Project Plan

Title

Smart Car System

Description

The project consist in designing a remote starting system for cars. The system is accessible through short as well as long communication channels. The system must be secure against hacking and must not interfere with the regular operation of the car. Additionally, the system should include GPS functionality to track the car through any of the available communication channels. A mobile application will be developed to remotely perform the required functions.

Supervisor

Dr. Kamal Chenaoua

Student

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Outcome

A complete embedded system design including the hardware part with the circuit and all required components, as well as the software part for the microcontroller and the mobile application. In addition, a prototype working on a real car (Honda Accord 2003).

Requirements

- Ability to start the engine through a short range wireless connection (Bluetooth)
- Ability to start the engine through a long range wireless connection (GSM network)
- The system must be capable of bypassing all the security systems of the car while remotely starting the engine without any human interference
- A mechanism to prevent thieves from stealing a remotely started car if the owner is not close to the car
- The system must not interfere or disable the regular operation of starting the car using the key; the car should operate normally after doing all the required modifications in the absence of the system or in case of failure.
- Users can locate the car position using GPS through the GSM network
- An android mobile application will be developed as a user interface to perform the above functions

Timetable

Task	Title	Completed	February			March				April				May	
			2	3	4	1	2	3	4	1	2	3	4	1	2
1.0	Hardware Part														
1.1	Identifying Ignition Cables and Installing Relays	X													
1.2	Identifying all required wirings and extending them to a centralized location		X	X											
1.3	Main Circuit Design		X	X	X	X									
1.4	Engine Start Test & Optimization				X	X									
1.5	Bluetooth Module				X	X									
1.6	GSM Module						X	X	X						
1.7	GPS Module						X	X	X						
2.0	Software Part														
2.1	Arduino Code														
2.1.1	Main Code (Engine control, security, safety, ..)			X	X	X	X	X	X	X	X				
2.1.2	Bluetooth Communication				X	X									
2.1.3	GSM Communication							X	X	X	X	X			
2.1.4	GPS Integration								X	X	X				
2.2	Android Application				X	X				X	X	X	X		
3.0	Optimizations														
3.1	Power Optimizations												X	X	