**Simple Parking Sensor**

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**Abstract**: An embedded system can be thought of as a computer hardware system having software embedded in it. An embedded system can be an independent system or it can be a part of a large system. An embedded system is a microcontroller or microprocessor based system which is designed to perform a specific task.[[1]](#footnote-1) Although we are not aware of it, we use embedded systems in all parts of our lives. These systems are used in devices such as televisions, telephones, and electronic home appliances. These devices can have more than one embedded system. For example, a car has more than one embedded system such as an engine system, brake system, parking sensor.

**Introduction (Motivation):** In this project, it is aimed to inform the user about the distance of an embedded system-based model vehicle via a smartphone application with Android operating system. In addition, the user will be warned with the sound and light on the system depending on the distance. In this way, drivers will be able to park their cars more comfortably and parking accidents will be reduced. Nowadays the biggest problem for new drivers who learn to drive is parking the car. With this project, the new drivers' adaptation process will be easier. This embedded system can be further developed and used for distance measurement purposes. In our motivation is learning how to use embedded system and how it is making easier in our lives.

**Proposed Embedded System:** The proposed system consists of two parts, a hardware and a software. The hardware consists of electronic components and middleware running on it. The software consists of an application running on an Android operating system based smartphone. It is aimed to be used to prevent accidents while parking the vehicle. All of the electronic components of the system have been selected from easily available from various suppliers. The mobile vehicle has Arduino Uno development board, a breadboard, an ultrasonic distance meter sensor, a Bluetooth transceiver module, a buzzer, 330 ohm resistor and jumper cables. The distance between the vehicle and the object is displayed on the phone screen via the Bluetooth module via the application running on the smart phone.

**Detailed Project Plan:**

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|  | **Tasks** | **Time(..-.. Day)** | **Success Criterion and Contribution to the Success of the Project** |
| 1 | Arduino Entegration | 1-2 | Creating the building block of the system.  Contribution to the success of the project: 30% |
| 2 | Arduino Software Development | 2-3 | Ensuring the system's operability.  Contribution to the success of the project: 30% |
| 3 | IOT Software Development | 2-3 | System development.  Contribution to the success of the project: 30% |
| 4 | Test / Kalite Kontrolü | 1-2 | Ensuring the control of the system's operability.  Contribution to the success of the project: 10% |

**References:**

* BEE 049- DESIGN OF EMBEDDED SYSTEM (<https://www.bharathuniv.ac.in/colleges1/downloads/courseware_eee/Notes/NE1/BEE%20049-%20design%20of%20embedded%20system.pdf>)
* EMBEDDED SYSTEM BASICS AND APPLICATION, Prof. Dr. Ali Ziya Alkar,2009
* BİLİŞİM TEKNOLOJİLERİ DERGİSİ, CİLT: 11, SAYI: 4, EKİM 2018

1. <https://www.bharathuniv.ac.in/colleges1/downloads/courseware_eee/Notes/NE1/BEE%20049-%20design%20of%20embedded%20system.pdf> [↑](#footnote-ref-1)