

**Title** **Driving school simulator**  
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**Patent no.**

**Description**  
**EN**

This project refers to the field of driving schools or institutions that need to train drivers. This device allows the realistic simulation of different real drive conditions, which allows the improvement of the skills of the driver/pilot.

The project represent a car simulator equipped with all the subsystems of a real car: steering wheel, pedals, light

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indicators, gearbox, parking brake (Figure 1).

The subsystems are created after the model of a real car, allowing the realistic simulation of the driving experience.

This system is intended for driving schools but can also be used to train drivers who need special skills (ambulance, police, rescuers, firefighters). This can be achieved due to the possibility of adapting the system and simulating different environments: vehicle type, season, traffic, visibility, road conditions.

The benefit of a car simulator is the possibility to study without the involvement of an instructor, it can autonomously detect and record the errors committed during the race, providing a report with the results and errors committed.

The following sensors are used to capture data from the simulator: resistive sensor - to read the position of the pedals (clutch, brake, and accelerator), optical encoder - is used to read the position of the steering wheel, buttons for peripheral control.

To simulate road bumps we use a DC motor connected to the steering wheel axle and three for the body. To transmit the data from the simulator to the PC, we used a microcontroller equipped with USB interface (STM32F411) - (Figure 2), using the HID protocol for data transmission. To display the speed, rpm, fuel consumption, we used the BMW e46 dashboard and specialized protocol for its control and data transfer.