



SENSOR FUSION EXPERT

SFE.U2.E4 HANDLING SENSORS

Essential Sensor Foundations

JUNE 2021, Version 1



Co-funded by the
Erasmus+ Programme
of the European Union

The Development and Research on Innovative Vocational Educational Skills project (DRIVES) is co-funded by the Erasmus+ Programme of the European Union under the agreement 591988-EPP-1-2017-1-CZ-EPPKA2-SSA-B. The European Commission support for the production of this publication does not constitute endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

LEARNING OBJECTIVES

The student is able to ...

SFE.U2.E4.PC1

The student is able to analyse and understand the applications of sensors.

SFE.U2.E4.PC2

The student recognizes the importance and potential of using sensors.

Application of Sensors

- Sensors can have many applications.
- As mentioned in the previous points, sensors, currently, can be applied either in automation, industry, vehicles, among others
- Let's present in more detail where we can apply some sensors

Applications of Sensors.

- **Temperature sensor**
 - This sensor displays and detects some temperature changes;
 - It can be placed in various devices for the purpose of alerting certain temperatures;
 - Using controller devices, actions can be triggered depending on the temperature of a given sensor

Applications of Sensors

- **Temperature sensor**
 - Example
 - Let's imagine a vehicle whose engine temperature cannot exceed 90°C.
 - Through a temperature sensor and using a controller, a mechanism can be activated either to alert the driver of the engine temperature or, if feasible, reaching a temperature of 90°C the engine can be turned off so as not to cause damage .

Applications of Sensors.

- **Proximity sensor**
 - This sensor is intended to detect proximity.
 - It can be applied in systems with computational, industrial and vehicle resources
 - It can also be applied to aircraft for ground detection.

Applications of Sensors.

- **Proximity sensor**
 - Example
 - Let's imagine a Drone. With proximity sensors, the drone is able to avoid collisions with objects.
 - This is very useful, as even to land the drone can be easier, due to the fact that it is able to recognize the ground more easily..

Applications of Sensors.

- **Infrared sensor**

- This sensor aims to sense variations with the light difference.
- Based on this it can detect people and movements
 - Example
 - A good example of this is the conventional cells of house alarms, which are composed of infrared sensors. As people move, the spectrum of infrared sensors decreases, so it can trigger an alarm by detecting movement.

Applications of Sensors.

- **Ultrasonic Sensor**
 - It aims to measure distances through waves.
 - It can be applied in various areas but especially in industrial systems, often to detect objects of difficult dimensions, such as foam or others.
 - This can be used to adjust sizes, speeds, detect irregularities, among others.

Applications of Sensors.

- **Light sensor**
 - It aims to measure the intensity of light
 - It essentially serves to detect light variations.
 - One of its applicability can be in CCTV cameras that when the environment starts to darken this sensor can serve to activate the IR sensors to allow a better view.
 - Another applicability is for example in cars that when it gets dark they can activate the headlights automatically.

Applications of Sensors.

- **Smoke and Gas Sensor**

- It aims to detect the presence of smoke
- They can be installed in homes or industries to detect anomalies and thus trigger actions such as cutting off gas and energy and alerting certain anomalies.
- It can also be used for monitoring environments.

Applications of Sensors.

- **LIDAR sensor**
 - Serves to detect light and its range
 - It can be used to carry out forest and terrain mapping
 - It is also a technology used in augmented reality, much to help mapping spaces without the need for conventional markers.

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This Training Material has been certified according to the rules of **ECQA – European Certification and Qualification Association**.

The Training Material was developed within the international job role committee “**Sensor Fusion Expert**”:

UMINHO – University of Minho (<https://www.uminho.pt/PT>)

The development of the training material was partly funded by the EU under Blueprint Project DRIVES.



Thank you for your attention

DRIVES project is project under **The Blueprint for Sectoral Cooperation on Skills in Automotive Sector**, as part of New Skills Agenda.

The aim of the Blueprint is **to support an overall sectoral strategy and to develop concrete actions to address short and medium term skills needs.**

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