



GRADO EN INGENIERIA ELECTRÓNICA INDUSTRIAL

*“Scale boat guidance
through mobile application”*

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KEYWORDS:

Altium Designer[®] 19, H bridge, DC motor, servo motor, [GPS](#), [IMU](#), [PCB](#) design, [C++](#), [Arduino](#), [ESP32](#), [LED](#), [MCU](#), [GPRS](#), [GSM](#), [LTSpice[®]](#).

ABSTRACT:

Posidonia oceanica is a seagrass species that grows in Mediterranean regions and it is typically distributed in meadows at depths ranging from the water surface to thirty-five meters. Its importance lies in its capability to constitute a valuable ecosystem where a great variety of fauna and flora can settle and to indicate the environmental quality of the littoral.

This plant is periodically studied by the CEI · MAR · UGR divers and, in some cases, they can locate these meadows at first sight from the shore or the water surface. However, in days when the seabed visibility is poor, this localization task can be quite challenging since the divers do not have any reference point that can guide them to the correct place.

The goal of this thesis is to provide divers with a maritime guidance device that facilitates the localization process. This will be implemented in an already-existing remote-controlled bait boat provided by our client, from which we will extract its original circuitry and replace it with a brand-new design, more modern and adapted to our project's requirements, while taking advantage of some of its included features.

This design will allow the user to remotely indicate the [GPS](#) coordinates of the desired location to the boat through a mobile application via [GPRS](#) so it can navigate autonomously to said location, acting as a buoy that indicates the divers the correct immersion place. This circuit will be implemented in a multi-board [PCB](#) and controlled by an [ESP32 MCU](#) programmed in [C++](#) using the [Arduino](#) framework.