Photodynamic Therapy (PDT) is a type of medical treatment that relies on the chemical reaction of a photosensitizer (commonly a dye) and the energy from a light source. This reaction causes the death of cells on the tissue where the photosensitizer is applied, therefore it can be particularly useful to treat infections which antibiotic therapy is no longer effective.

One of the light sources widely used for PDT are arrays of light-emitting diodes (LEDs) of certain wavelengths, depending on the type of dye that is applied to the tissue. Automated control systems for such arrays intended for clinical use already exist in the market. However, tend to be inaccessible in countries like Brazil, rising the general cost of the treatment.

Consequently, we demonstrate how it is possible to develop and build a cost-effective, automated control system for LED arrays using an Arduino microcontroller. The system consists of a case with connections to an AC power supply responsible for powering the LED drivers, whose output goes to an electromechanical relay controlled by the Arduino microcontroller, and finally to the LED via a power cable connected to the outside of the case.

The user can define and monitor the time the LED is powered for the treatment via a LCD display and a rotary encoder, and after such time the system powers off the LED.