

## 2.1 Overview of the Arduino platform and its capabilities

Arduino originated from the Wiring project, which was developed at the Interaction Design Institute Ivrea in Italy. The Wiring project was an open-source electronics prototyping platform that was designed to provide a low-cost and easy-to-use environment for creating interactive physical computing applications. The project was led by Hernando Barragán, a professor at the Institute, and the platform was based on the open-source, programmable Atmel microcontroller. Arduino was derived from the Wiring project and was released in 2005.

Arduino is an open source hardware and software platform used for building interactive electronics projects. The Arduino platform was designed to facilitate creating digital projects for the physical world. It consists of a physical programmable circuit board (often called a microcontroller) as well as a set of software tools for writing code for the board.

The Arduino platform is based on the Atmel AVR microcontroller, so it is capable of running programs written in C or C++. The board itself is made up of a number of components, including a voltage regulator, a USB connection, an LED, and a set of analog and digital pins that allow you to connect external components to the board. The board also includes a reset button and a power switch, allowing you to reset and power the board on and off.

The Arduino platform has a huge amount of flexibility and can be used to create a range of projects from simple to complex. For example, you can use the Arduino platform to create a basic home automation system that turns lights on and off, or you can use it to create a complex interactive art installation. You can also use the Arduino platform to create robots and other self-controlled devices.

The Arduino platform has grown to become an incredibly popular choice for makers, hobbyists, and professionals alike. It is incredibly easy to use, and the large community of users provides a wealth of tutorials and information. Additionally, the open-source nature of the platform makes it easy to customize and expand upon existing projects. It is a great platform for anyone looking to get started with physical computing projects.