



# DESIGN OF A FLAT SURFACE TOUCH SCREEN

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## Introduction

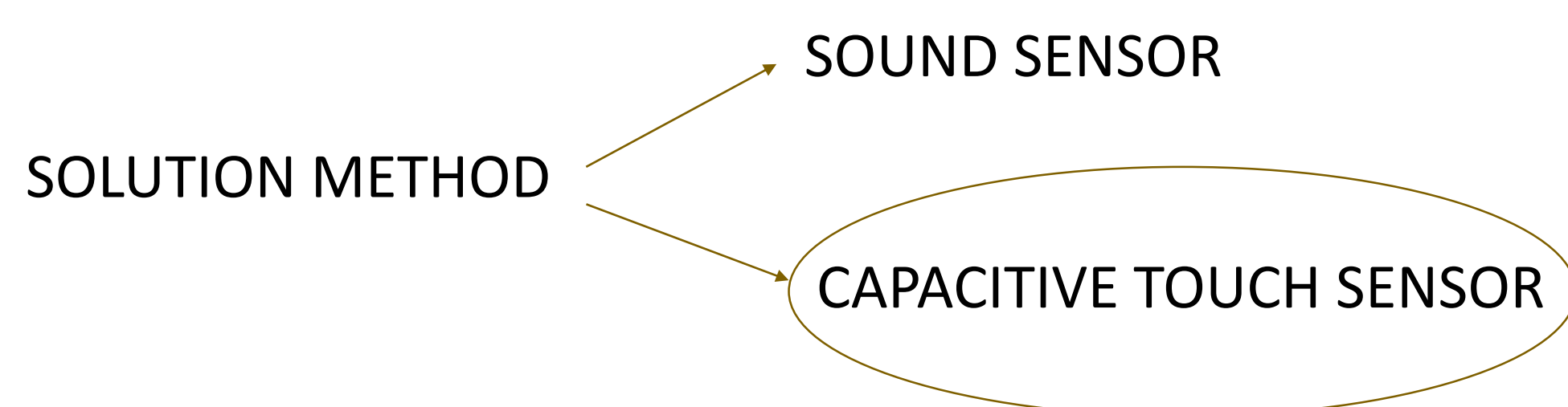
The purpose of the project is to implement a touch surface using wood. A touchable wooden surface is not a material that we encounter in our daily lives. This design was meant to be used in built-in dishwashers. The goal is to remove the buttons on the machine and to achieve a more aesthetic appearance. Therefore, it has been give a touchable feature to the built-in machine without disturbing its external appearance.

## Specifications and Design Requirements

Since the touch screens are generally made of glass or thin materials, they can easily detect the sensors placed under them and they can be designed easily.

But when we try to design a touch surface with wood material, the insulating structure of the wood does not allow it.

## Solution Methodology

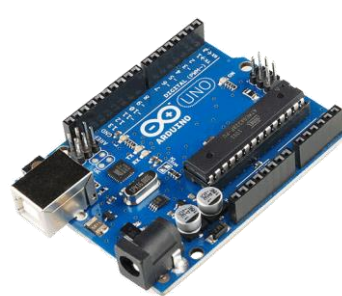
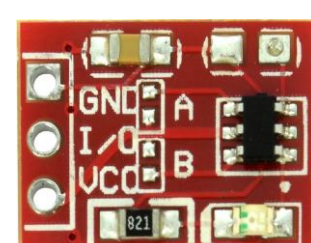


Capacitive touch sensor method has been used in this project.

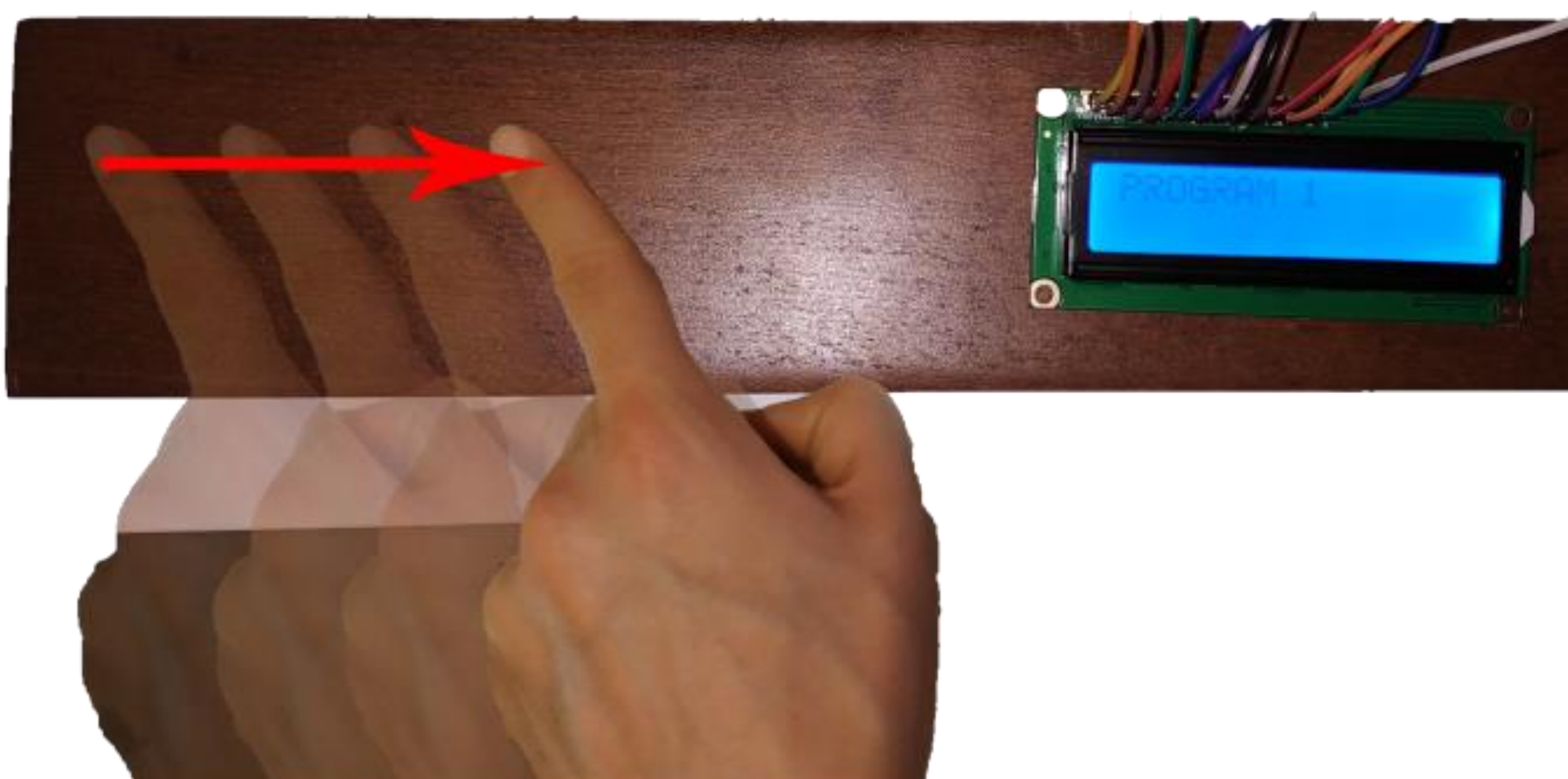
The circuit board consisting of capacitive touch sensors that we will put under the wooden panel on the machine will form a touch surface.

Main hardware part of the design consist of

- TTP223 Capacitive Touch Sensor
- Arduino UNO R3
- LCD



The TTP223 is a touch pad detector IC which offers 1 touch key. The touching detection IC is designed for replacing traditional direct button key with diverse pad size. Low power consumption and wide operating voltage are the contact key features for DC or AC application.



## Application Areas

This project is designed for built-in dishwashers.



With the touchable wooden panel



Built-in dishwashers are provided to have a more aesthetic appearance without buttons.

But it is not only limited to this and can be used in all kinds of household appliances.

## Results and Discussion

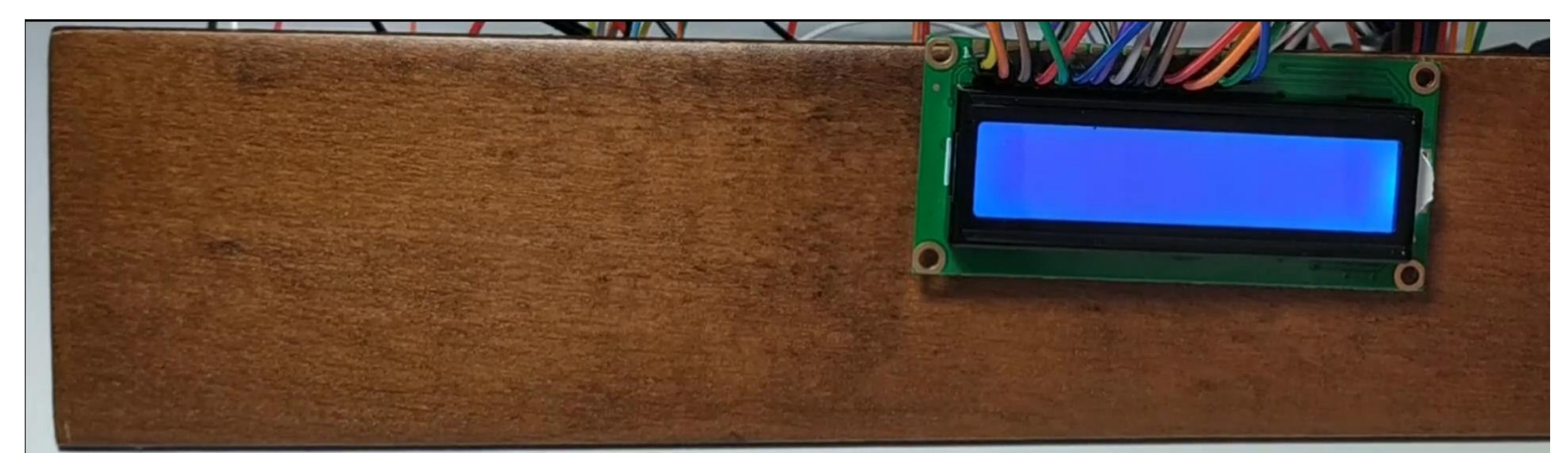
Slide motion could be detected at the final stage. As the output, the slide motion can allow the user switch between programs.

The front-end of the built-in dishwasher will be replaced with this wood cover. So, there will be no need for buttons.

Also, this design is meant to be adaptable to wooden surfaces with different features, therefore users will be able to use this design directly on their systems.

In the future, it will not be limited to just sliding motion. New gestures will be added i.e. pressing down for a long time, drawing circle, multi-touch etc.

At the moment, the touch of a finger can be detected through 1 to 8 mm wood, but in the future work, the thickness can be increased and make it more functional.



A Small Prototype of the Design

## Acknowledgements

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