

# Skee-Pong Arcade Machine

*Cultivated Cocktails*

Funding Provided by:



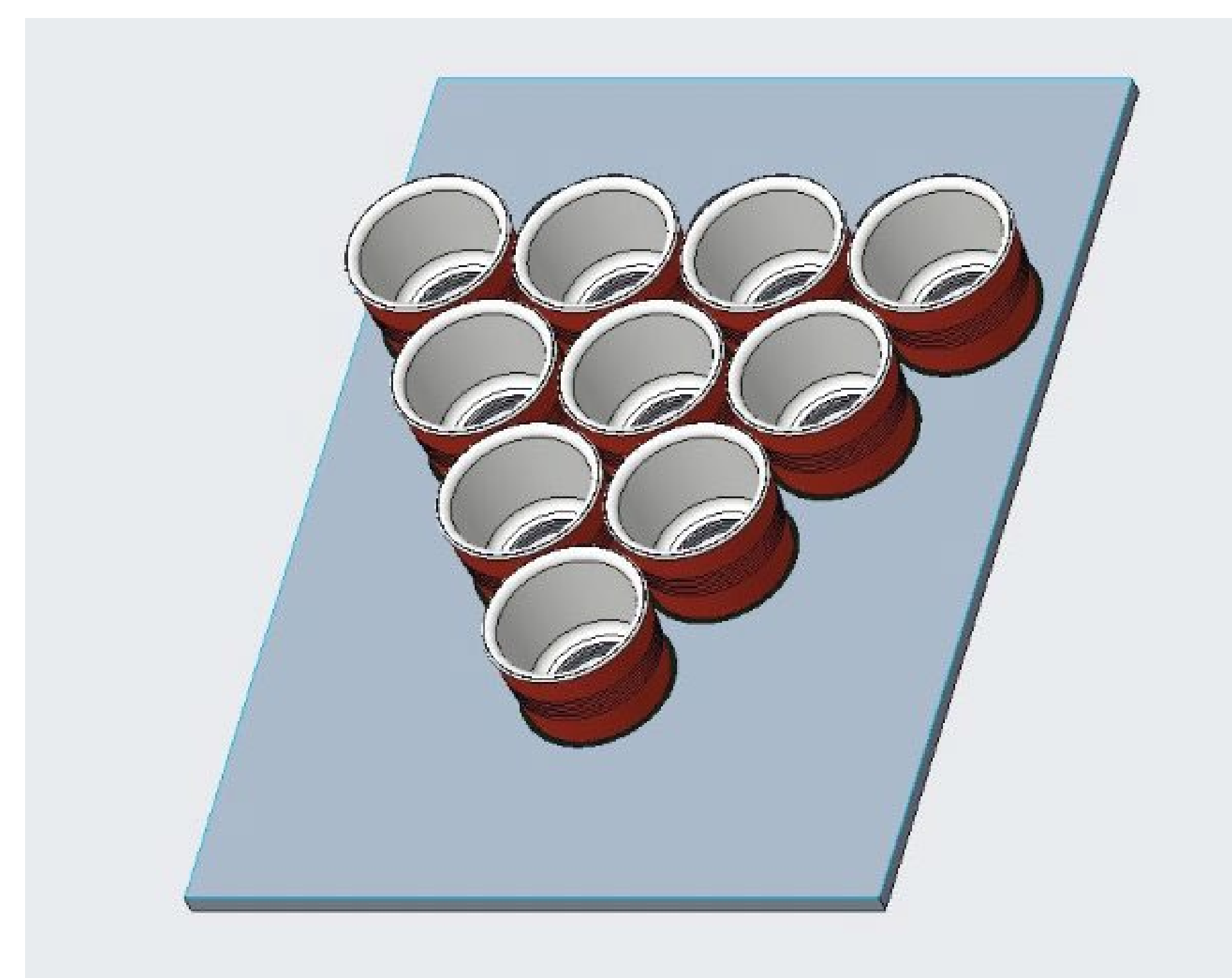
## PROBLEM STATEMENT

- Create an engaging, all-ages-friendly space by offering unique arcade and bar-style games to retain customers and differentiate from competitors.
- Transform upper part of the Skee-Ball machine into a setup resembling "Pong" with 10 smaller rings in a triangle formation.
- Incorporate "Pong" gameplay mechanics with back-and-forth action between players and a built-in system to eliminate rings hit during the game.

## REQUIREMENTS

#	Description
1	Rebuild the ball targets to have ten rings / cups of equal diameter arranged in a triangle pointing downwards.
2	Display the players' score on a screen in a bowling score fashion.
3	Build a system of lights and use them and the screen to inform the players of the game's status.
4	Display which cups are already hit and which are not.
5	The system should perform the whole sequence of the game behaving as expected.
6	Wirelessly control and change the settings on the arcade machine from a remote device at the bar.

## MECHANICAL DESIGN

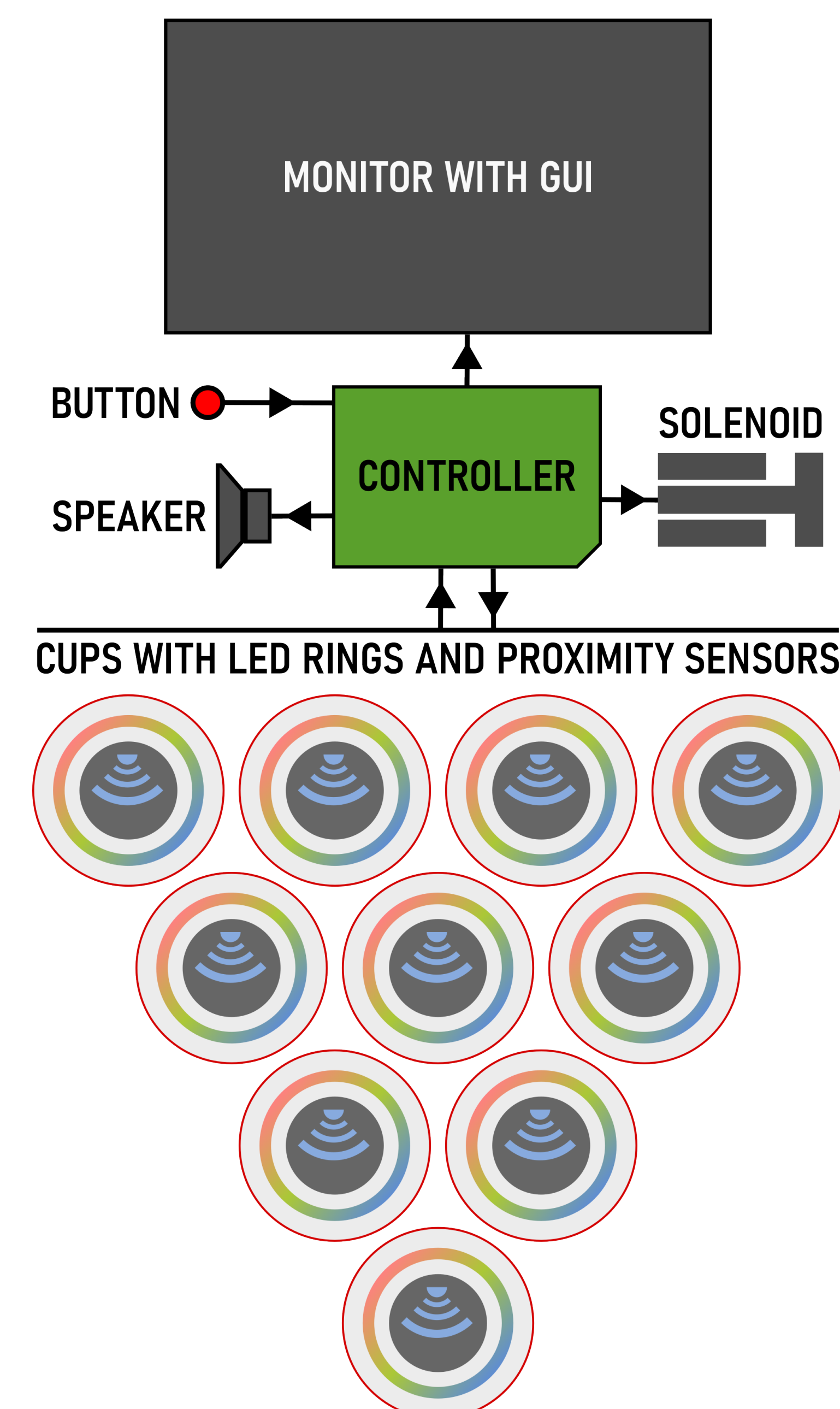


The team designed a "Pong" style layout for the game that was cut into plywood. Replication of "traditional" solo cups were created through 3D printing using a TPU filament.

## ELECTRICAL DESIGN

The team has utilized a Raspberry Pi as the main controller to process inputs from a button, sensor, and HTTP commands. Additionally, it controls the solenoid that releases the balls, LED lights that communicate the current state of the game to the user, and the graphical user interface on the top screen. This interface not only displays the current state of the game but also provides a history of hits and the total score.

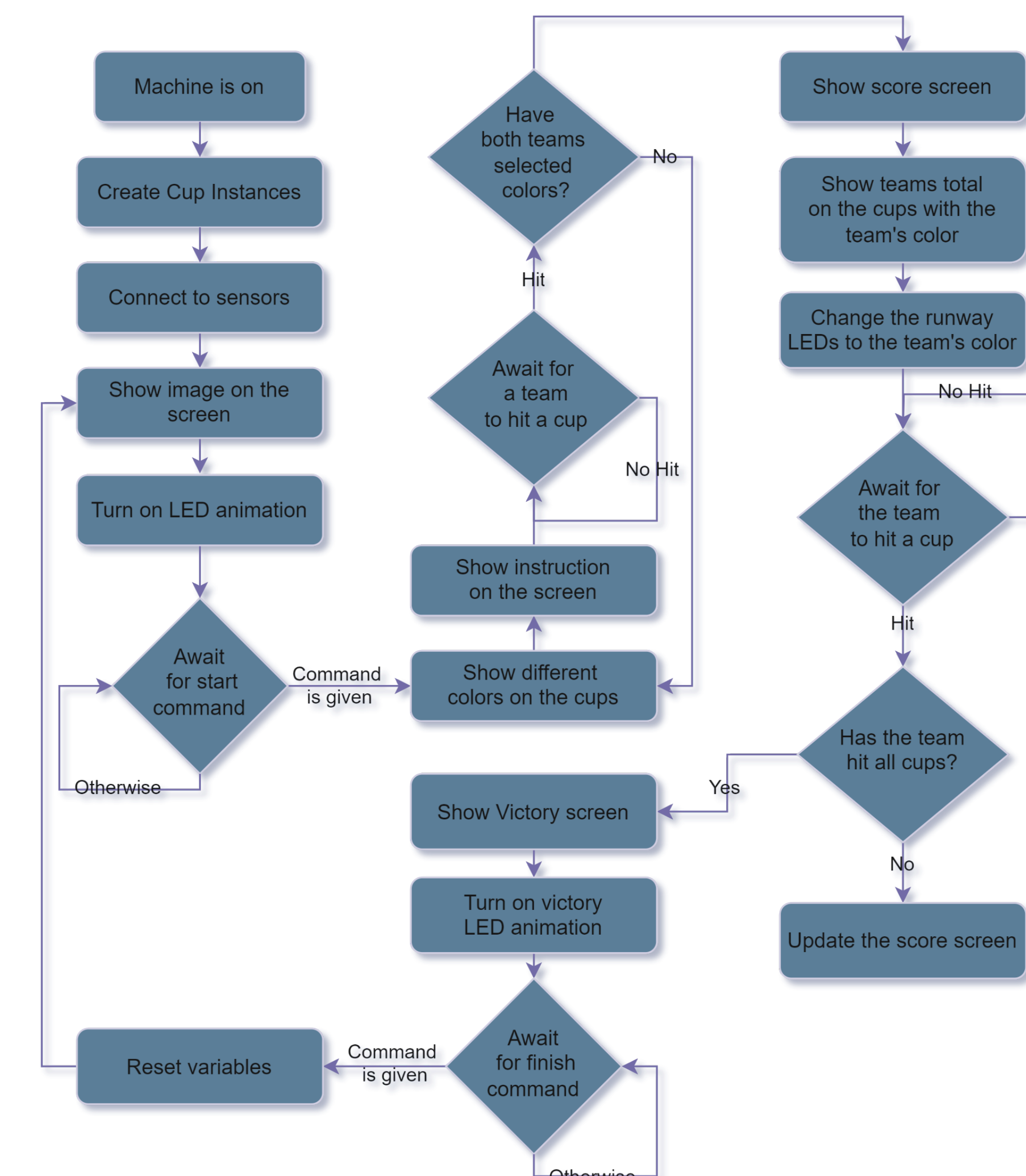
### Electrical Components Configuration



## SOFTWARE DESIGN

The team has designed a software program to process the inputs and control the outputs for all the electrical components. The program also generates the graphical user interface for the screen, which communicates the current state of the game to the user. Additionally, the interface provides instructions on what to do next.

## Software Design Flow Chart



## RESULTS

The team has created a functional and playable game that meets the customers' requests. Through the process of the creation the team went through several iterations of each component created to find the best possible solutions.

The basic necessary components from the original machine have been refurbished and any additional features required were created in house. The team attempted to not just create solutions but also quality parts.



## SUMMARY AND CONCLUSIONS

To the team's knowledge a product like this has never been created before. With that in mind, the team feels confident with the work completed. Overall, the team has created a product that has fulfilled the requirements the customer requested.

## FUTURE WORK

The future for this project will include extended software development and the fixing of minor mechanical malfunctions. More specifically, gameplay will not be at 100% functionality at the end of our deadline. Mechanical issues currently require operator to intervene to fix the game as well.

## TEAM & ACKNOWLEDGEMENTS

- Team members:
  - Saveliy Saunin – Electrical and Computer Engineering Technology
  - Jared Tallent – Engineering Technology
- Sponsor – Taylor Howard
- Faculty Mentor – Brett Banther
- Electrical Consulting – Shawn Lawyers



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