Advanced Beer Pong

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# Purpose

The purpose of this document is to structure my beer pong table project. The project will have advanced electronics and capability. It will require some woodworking capability for the actual table construction but this would be one of the last steps.

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# Idea/Concept

The idea is to try to make a very advanced beer pong table in various stages (from minimalistic and working to wow this is amazing). The table could include the following features:

* Cup locator
* Ball washer
* Music Player
* Statistical tracking
* User database
* Who’s next query
* Social media interaction
* Cup lights
* CPU partner
* Beer dispenser/Storage
* Real-time game

Some of the hardware may include:

* LEDs
* Infrared lights and sensors
* Motors
* Microcontrollers
* Wifi
* Bluetooth
* Amplifiers
* Power supply
* Pumps
* Peltier module

## Cup locator

Difficulty: Medium

Hardware:

* Motor
* Infrared LED
* Infrared Detector

The cup locator would be done with the user of infrared lights. The cups would sit on top of frost Plexiglas. A motor would be connected to a row of infrared LEDs and detectors on a strip. The motor quickly steps across the visible window. At each step the infrared flashes and the detector takes a reading. Each step is stored into memory. After the scan is complete, the data is analyzed and the LEDs are mapped based on the location of the cup.

Challenges\open issues:

* How fast can cups be scanned?
* Accuracy of the scan
* How fast the data can be read and stored?
* Creating the mapping.
* How accurate of sensing technology

## Ball Washer

Difficulty: Medium

Hardware:

* Fan
* Water pump

The ball washer is more of a trick that is commonly used. On one side of the table there is an entry section for the ball. When the ball enters it floats on the water in the pvc below. The water is slanted to flow one direction. The ball flows to the exit opening of the table. At the exit, there is a fan that makes the ball flow up to the exit port and stay there until grabbed.

## Music Player

Difficulty: Medium

Hardware:

* Amplifier
* Speakers

Pretty self-explanatory. There would be an amplifier and speakers mounted into the system. There would need to be isolation to prevent cup rattling so a smaller amplifier would be fine. This is more wood working and mounting then electronics

## Statistical Tracking

Difficulty: Easy

Hardware:

* Buttons

The statistical tracking would be mostly on the user’s end. The cup detector can track when cups are pulled so it can give cup credits to the other team but it is up to the team to determine who made what cups. This would be a button interface to give credits. At the conclusion of the game the following information is saved:

* Game result to games database
  + Winner
  + Loser
  + Score
  + Time
  + Date
* User updates to the user database
  + Cups made
  + Shoots taken
  + Shooting %
  + Bounces
  + Bouncing %
  + Wins
  + Losses
  + Win streak
  + Losing streak
* Team updates to the team database
  + Cups made
  + Win
  + Loss
  + Rounds
  + Win streak
  + Losing streak
* Games database
  + Up next

## User Database

Difficulty: Medium

Hardware:

* RFID
* Keyboard
* Camera
* Monitor

The user database is used for all tracking. A user can be entered with either a keyboard entry or an RFID tag.

## Real-time Game

Difficulty: Medium

Hardware:

* Some form of a PC
* Video output
* Camera

The real-time game engine is what makes this. It will actively display the game status. Cups remaining, players, teams, sides, the next up list, time, maybe even ball status.

When the player signs in they can either pick their side or if they are coming off of the que list they are assigned to the correct side. From here, the game is reracked and ready to start. The game is monitored for cups, player score keeping, music, etc…

# Feasibility

# Scope

# Design

# Prototype

# Testing

# PCB

# Package

# Verification

# Optimization

# Add-ons/Future Goals

# Conclusion

# Glossary

# Acronyms

# References