

CHEERS!

Individual Project

Keywords

Interactive design, Arduino, Processing, Digital Hardware

Brief Introduction

The interactive design using sound, lights, and buttons to create an inter-personal interactive relationship at a bar while still following the social distancing rules



BACKGROUND

In the year of 2020, COVID-19 Pandemic has greatly affected people's daily life in all means. Many countries have implemented social distancing and "stay-at-home" orders to contain the virus outbreak, The preventative practices include:



Wear mask



Clean hands frequently



Keep social distancing

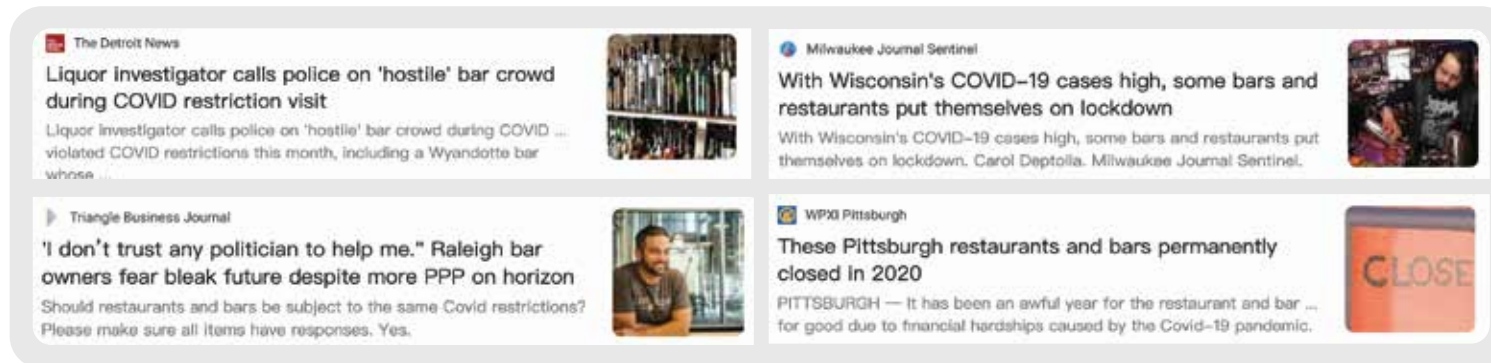


Stay-home order

While these practices are proved to be effective methods to slow the spread of the virus. However, at the same time, most people's social activities are greatly impacted.

Bar in the Context of COVID-19 Pandemic

As public businesses are in the phase of resuming operations, **social distancing guidelines** are still essential to keep everyone safe. In order to observe the pandemic's impacts on people's social life, I choose bar, a popular social place, to be the observing subject. According to the news and my own observations, bars are badly affected by the pandemic.



Many were closed, the ones left are strictly following social distancing guidelines, which were **difficult to social between strangers**.

RESEARCH METHOD

Ethnomethodology

Ethnomethodology is the study of the knowledge of the common sense of how ordinary people make sense of their everyday world, it includes the analysis of **social organization, spatial organizations of interaction, and embodied interaction**.

Environment

The bar we observed was a small beer and cocktail bar.



Light resource: LED strip lights



Sound: Loud background music



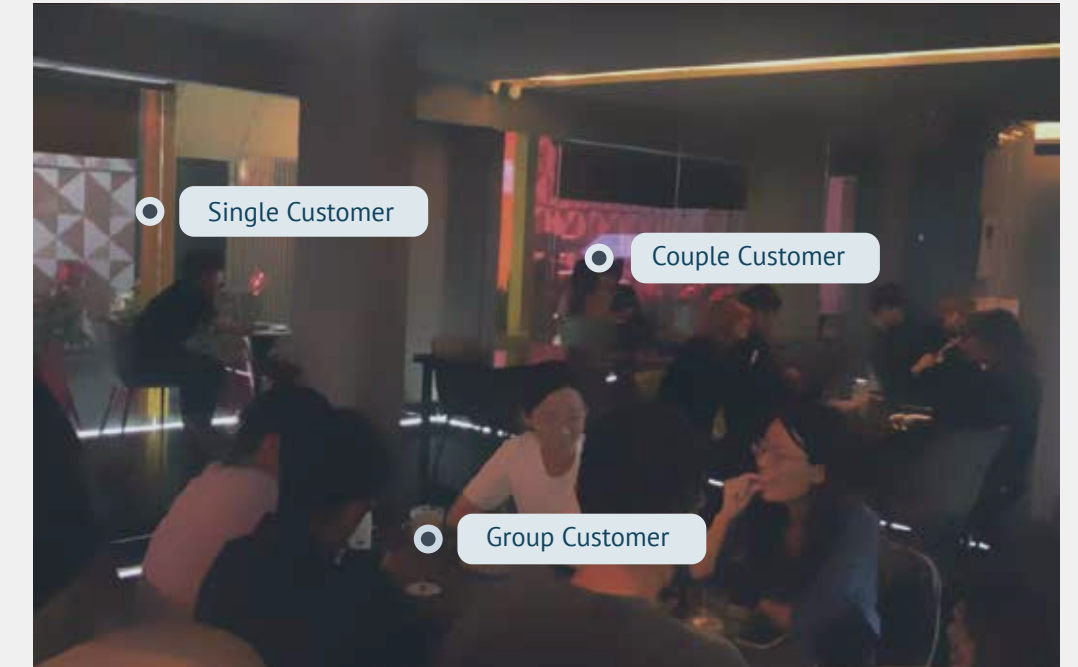
Screen: Projector and screen playing movies or sports games

Members

At a bar, there are two types of social bonding take place:

Between Friends

Between Strangers



Paperplane Beer Bar (Hangzhou, China)
22:00-24:00, 9.15.2020

DESIGN GOAL

The goal is to rebuild the inter-personal interactive relationship at a bar while still following the social distancing rules, using digital technologies.

ETHNOMETHODOLOGY

Social Organization Analysis

Rule-based model:

According to Parsons, people are controlled by norms and values of behavior: cultural values and social structures. People learn the them through instruction or experience. By using the rule-based model we can understand how people's behaviors are defined inherently.

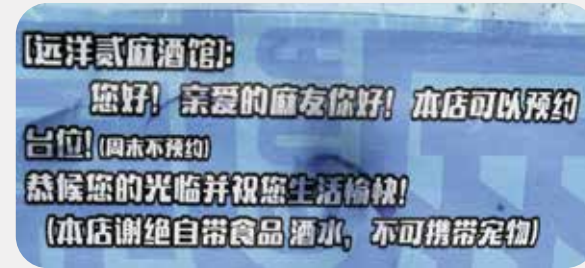
Rules



Do not bring your own drinks or food



Kitchens are staff only

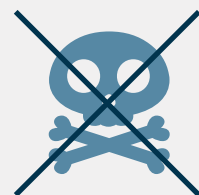


No pets are allowed

Norms



Do not fight



No drugs



No underage drinking

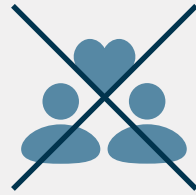
Common sense



Behave yourself



Buy drink to make new friend



Better to not disturb couples

ETHNOMETHODOLOGY

Spatial Organizations of Interaction Analysis

F-formation

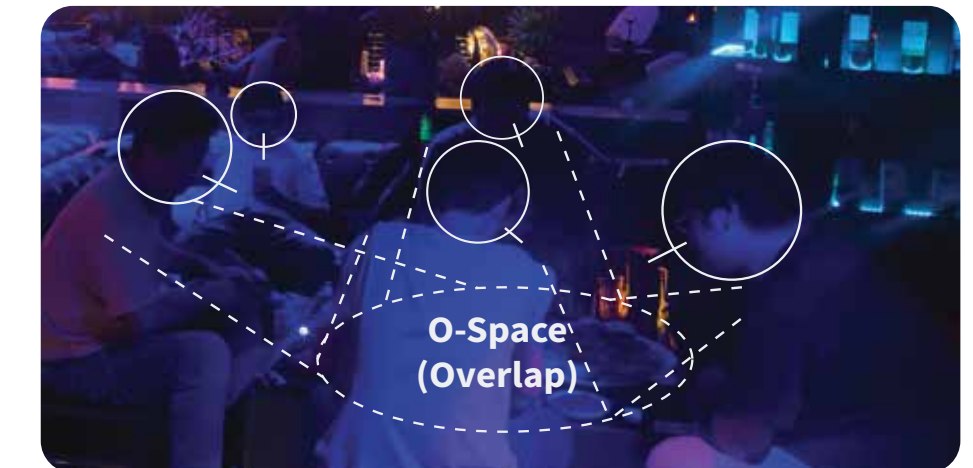
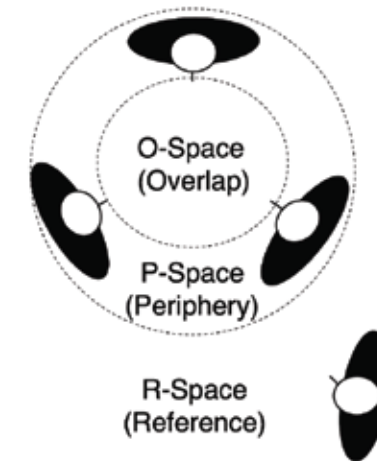
We applied the F-formation system on the observed spacial organizations within a bar. Formation is an actively maintained arrangement of people that frames an interaction--distinguishing participants from "others" and helps participants to maintain a common focus of attention (Kendon, 1996).

In the F-formation system, each person has a 'transactional segment' which is framed by the orientation by the position & orientation of body; in conversation, people arrange their transactional segments in a joint transactional space: the Overlap or O-space.

Using the F-formation system, we can understand the spatial arrangements when people interact and what they imply.



Kendon: Basic F-formation System

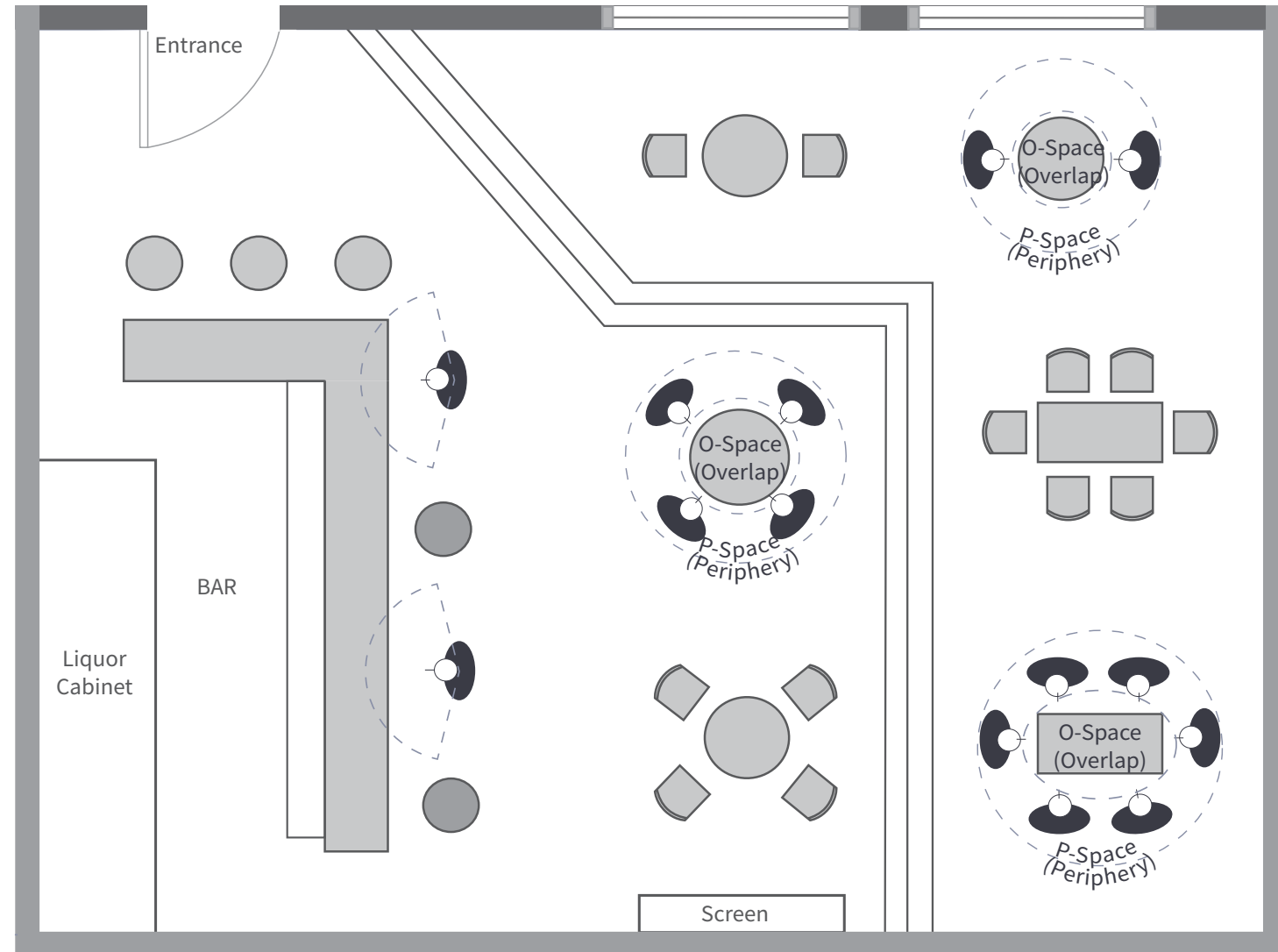


ETHNOMETHODOLOGY

Spatial Organizations of Interaction Analysis

F-formation of Spacial Organizations within a Bar

Observing the entire spacial organizations can help us how to design for the whole setting.



ETHNOMETHODOLOGY

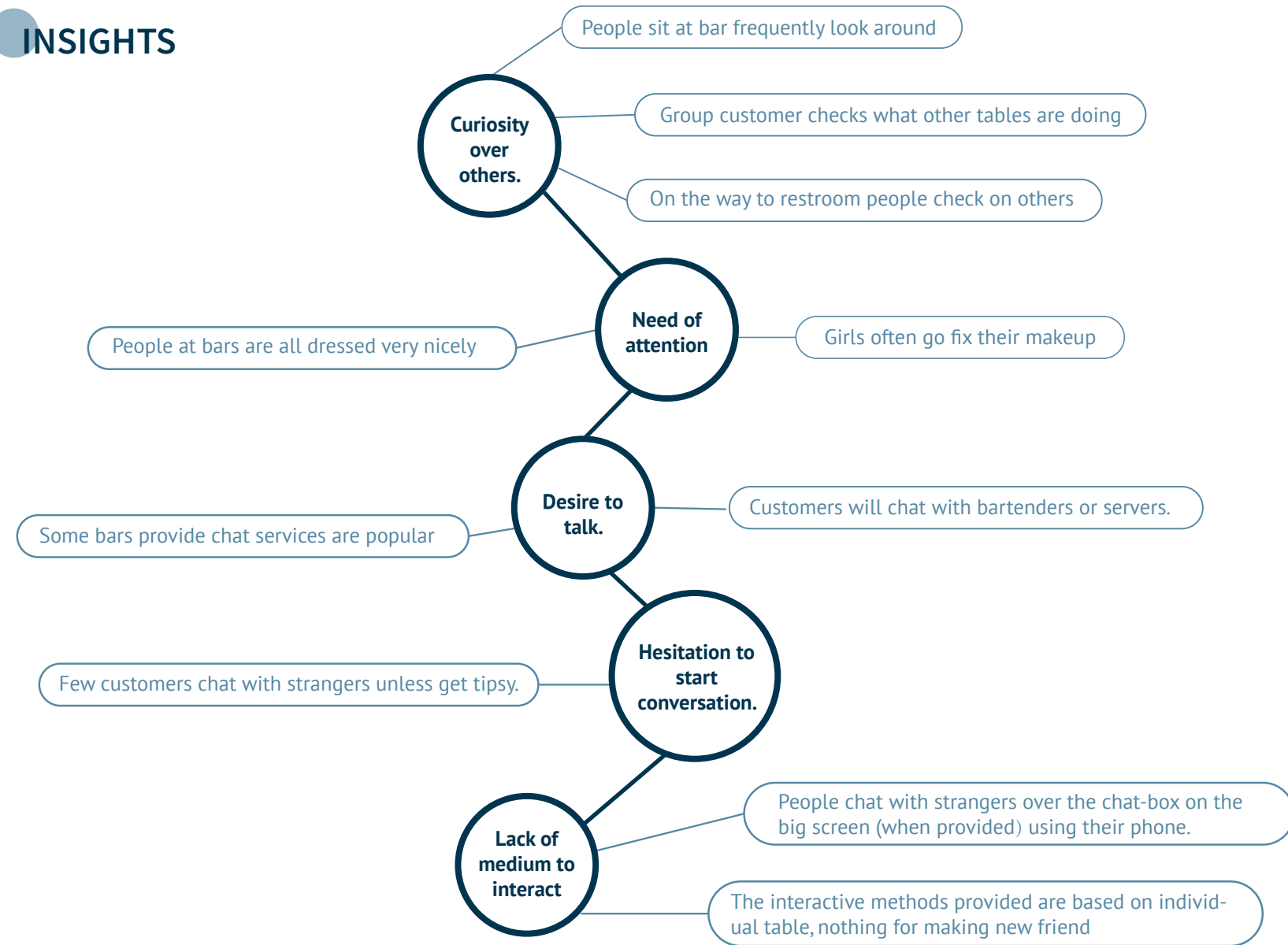
Embodied Interaction Analysis

Social Interaction Flow

We are analyzing how a social interaction begins, continues, and ends, what resources did the participants use to explore the social signals, and to understand the mechanism of the social interaction in this setting

	Get seated	Drinks are here	Sit for a while	Before leaving
Single	Order a drink, waiting 	Take a sip, talk to the bartender 	Look around, look at phone, talk with the bartender 	Zone out, finish and pay
Couple	Read the menu and order, talk to each other 	Start drinking and continue talking 	Frequent interactions, keep talking the whole time, playing some dice games. 	Get a little tipsy, still talking and having fun
Group	Read the menu; very few interactions or talking; make the order 	Drinks would break the silence, group members start to talk. 	A lot of talking and game playing, 	Run out of topics, most members looking at phones.

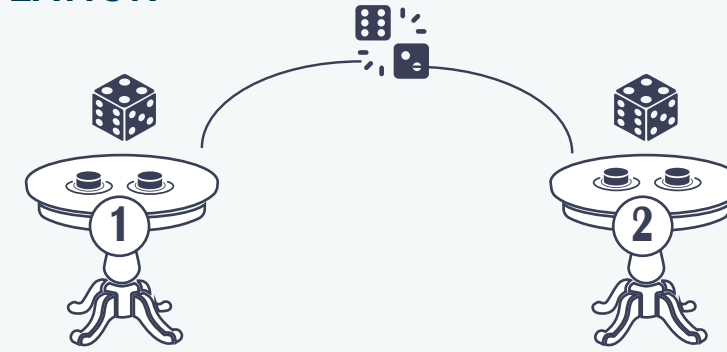
INSIGHTS



DESIGN OPPORTUNITY

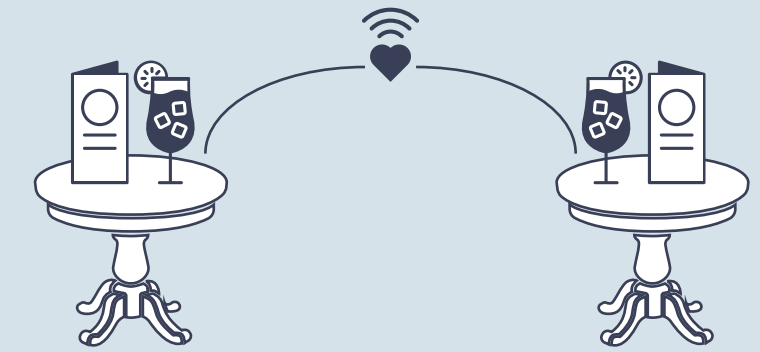
Under the circumstances of COVID-19 pandemic, in a bar people still have the needs to make new friends and the eager to interactive with strangers, but they lack a ice-breaker or the opportunity to initiate the conversation. Our installation is to fill this gap.

IDEATION



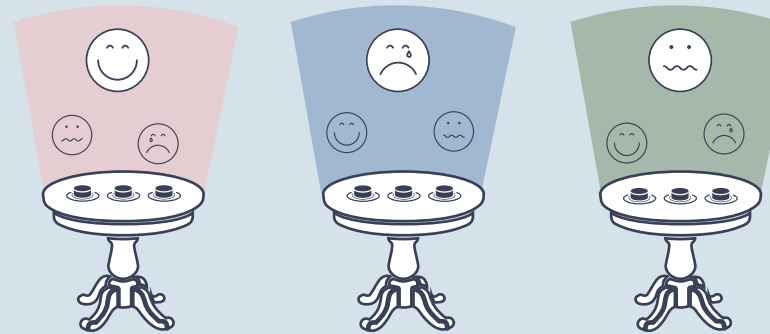
Drinking games: Each table has a digital screen and an assigned number, people can connect to other tables to play a game, once the other table accepts the invitation they will join the game and play it together.

Disadvantage: this installation requires too much efforts from the users; the game and rules might ruin the original social flow within each group. Our design goal is to initiate an interaction not guide people complete a full interaction.



Drink buddy: if two customers ordered same drink on the menu, they will be connected

Disadvantage: the probability that two people order the same drink is not very high, which is a strong limitation for the installation to be effective



Mood Button: each table has buttons to choose the mood of the day, a LED light will show corresponding colors

Disadvantage: this installation only creates a **passive** social chance which is too weak to initiate an interaction.

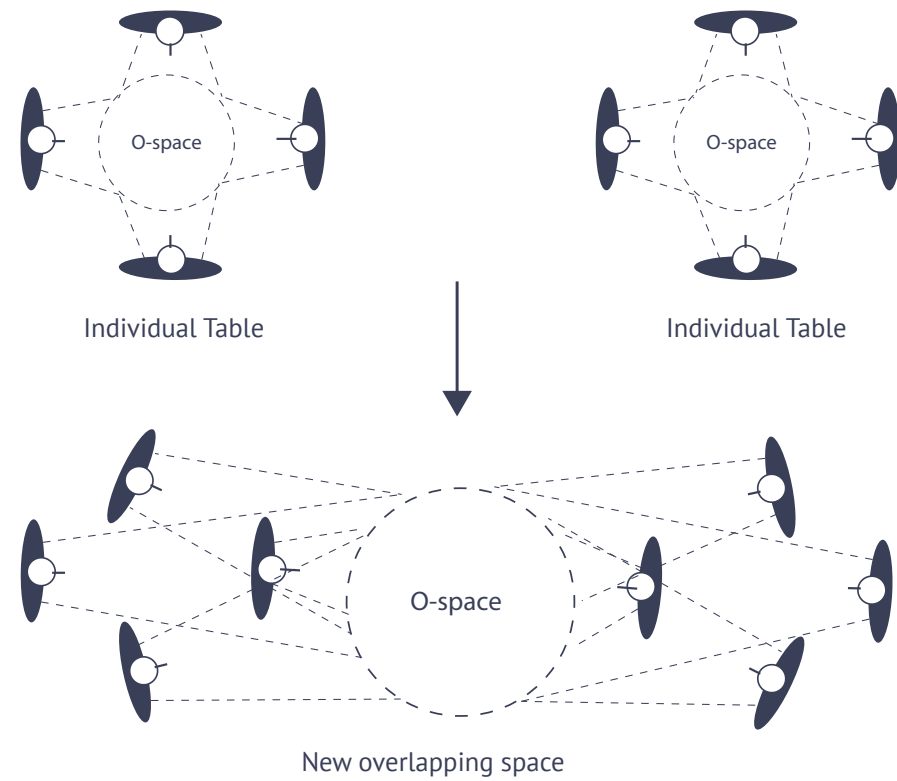


Cheers! : each table has a sensing cup mat, once two people put their glass on the cup mat they will be connect with a clinking sound playing to do a distanced toast.

Yes! : this installation has the functionality for creating interaction between tables; a toast is a common interactive way in a bar blends into the scene without asking for too much efforts; also encourage people to stay social distancing.

CONCEPT

The design concept is to re-shape the F-formation system of social organizations within the bar: change from two independent, non-overlapping spaces to create a new mutual overlapping space which connect two groups.



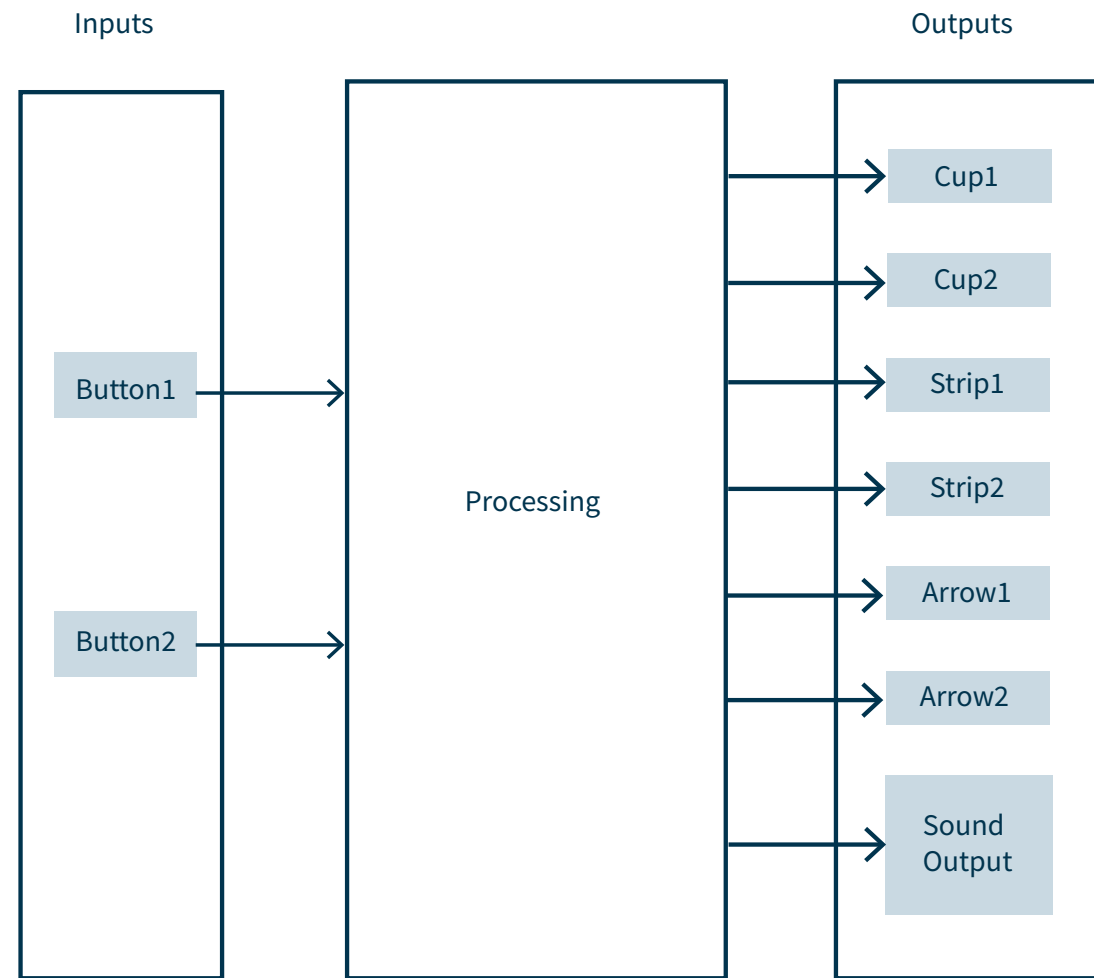
Our installation will create a new overlapping space between tables, and build an interactive connection opportunity between strangers while keep social-distancing.

User Flow

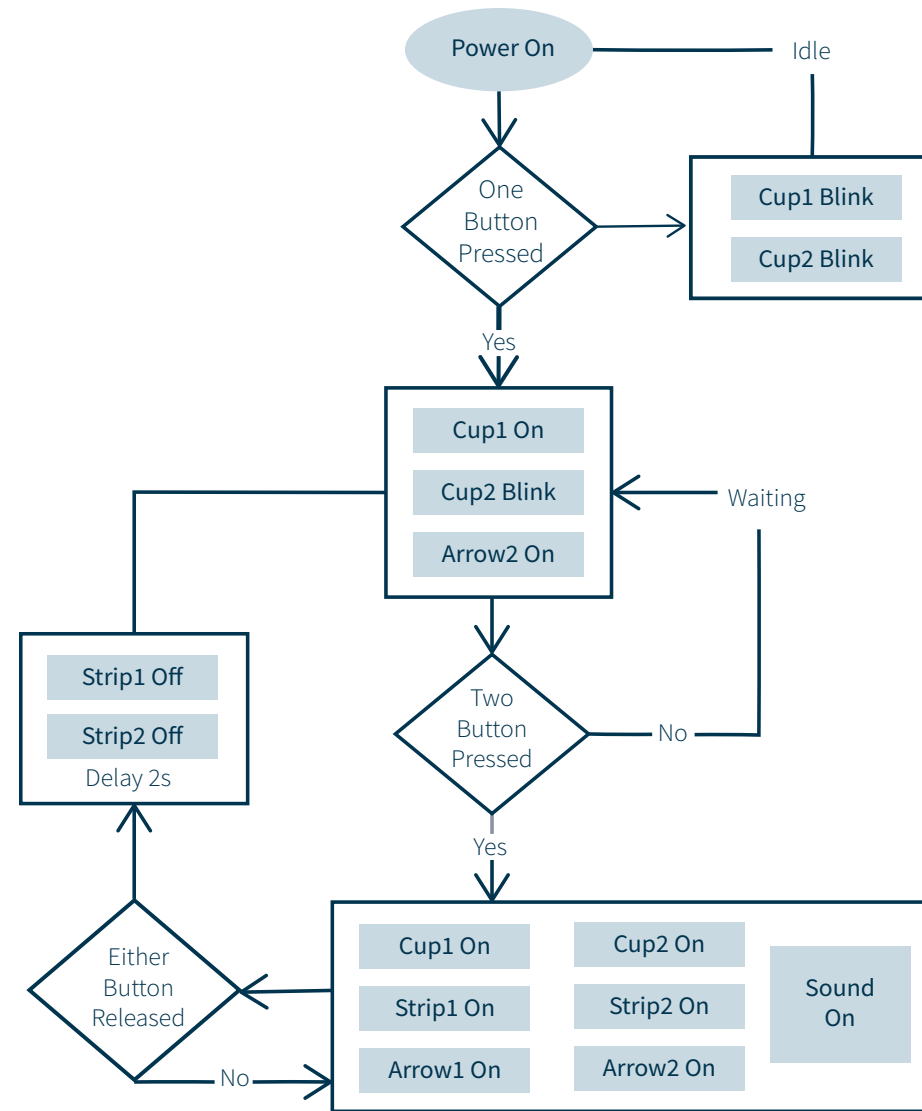
<p>Each table will have a cup-holder that continuously blinks and an arrow that is off.</p> <p>1</p>	<p>Once a customer put the drink glass on the cup-holder, the button will be pressed, and the cup-holder will be lighten; the other table's arrow will be on.</p> <p>2</p>
<p>The other customer will put the drink glass on the other cup-holder; both table's cup-holders and arrows are on now.</p> <p>3</p>	<p>Each table's LED strip will be lighten up, and both will reach to the middle to make a "connected" effect; a glass clinking sound will be playing from each table's speaker.</p> <p>4</p>

PROTOTYPE - Programming

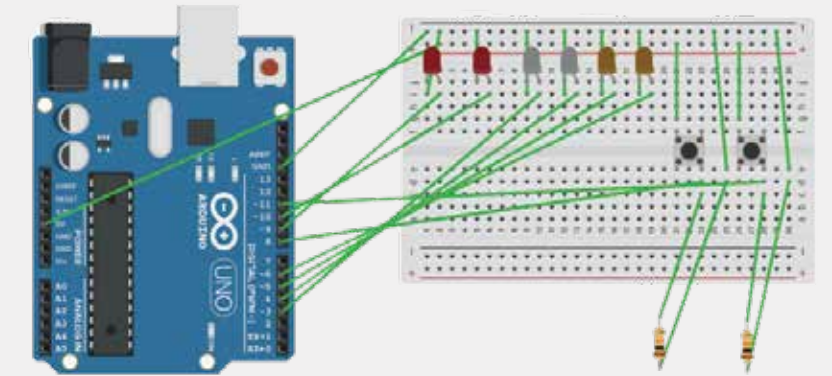
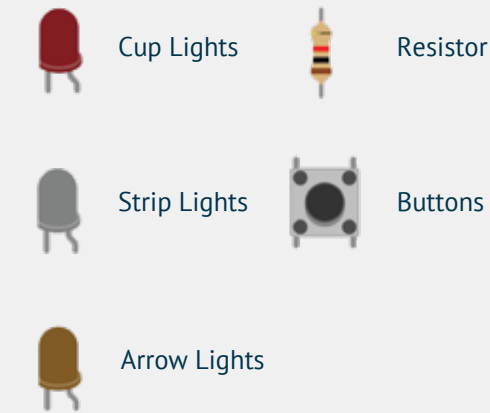
IO Model



Status Machine



Wiring Prototype



Arduino Code

```

finalcup
void loop() {
  buttonState1 = digitalRead(button1);
  buttonState2 = digitalRead(button2);
  initialState();
  c1();
  c2();
  if(buttonState1==HIGH&&buttonState2==HIGH){
    state1();
  }
}

void initialState() {
  if (buttonState1 == LOW && buttonState2 == LOW){
    blink();
    digitalWrite(strip1, HIGH);
    digitalWrite(strip2, HIGH);
    digitalWrite(strip1, LOW);
    digitalWrite(strip2, LOW);
    digitalWrite(strip1, HIGH);
    digitalWrite(strip2, HIGH);
    digitalWrite(strip1, LOW);
    digitalWrite(strip2, LOW);
  }
}

void c1(){}
void c2(){}
  
```

Processing Code

```

cup
import processing.serial.*;
import ddf.minim.*;

Minim minim;
Serial myport;
AudioPlayer player;
char buttonValue=0;

void setup(){
  printArray(Serial.list());
  String portName = Serial.list()[4]; //choose portnumber
  myport = new Serial(this, portName, 9600);
  size(300, 300);
  minim = new Minim(this);
  player = minim.loadFile("Clicking Glasses.mp3");
}

void draw()
{
  background(0);
  if(myport.available()>0){
    buttonValue = (char)myport.read();
  }
}
  
```

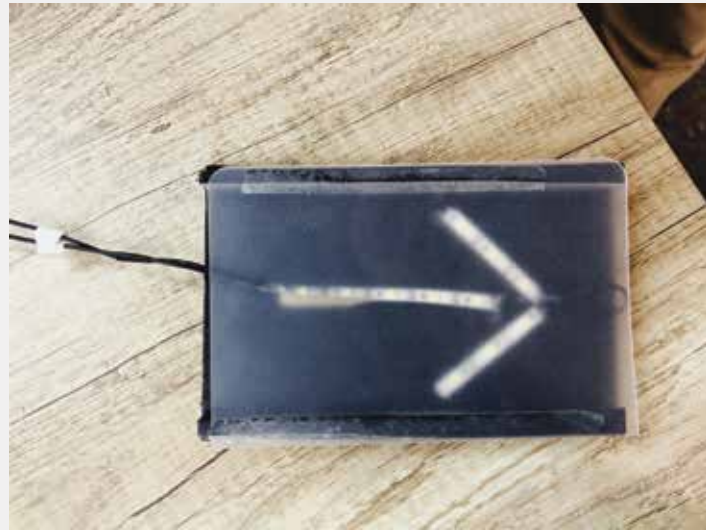
ASSEMBLING



STEP 1: Cut out the cup-holders, attach them with LED strips, and solder the wires and springs to make it a button.



STEP 2: Design and attach the cup-holders' surface with comprehensible notice.



STEP 3: Soldering the LED strips to be an arrow shape; covered by plastic boards.



STEP 4: Connect all the wires with breadboard and Arduino board.

INSTALLATION TESTING



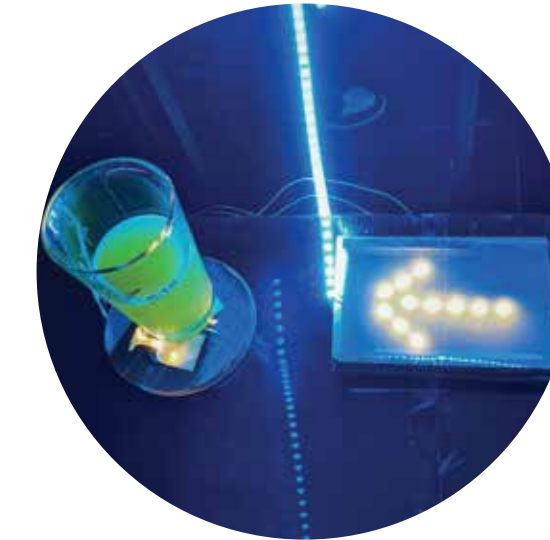
The cup-holder is blinking to attract customer's attention.



One cup-holder is pressed by a beer glass.



Arrow on the other table is lightened up. A beer glass pressed the other cup-holder.



Both tables cup-holders and arrows are lightened up.

FINAL INSTALLATION



FURTHER ITERATION PLAN

Our user says:



The LED strip lights are too bright

Going to change:

Option 1: add a translucent surface over the light strips to make it less bright
Option 2: try to find other more subtle light resource

Our user says:



The shape of connection is a little boring

Going to change:

Option 1: to tape the LED strip into the Bar's logo shape
Option 2: attach a light box in the middle

Our user says:



Too many cables, feels unsafe

Going to change:

Option 1: re-program the codes to reduce the needed control cable
Option 2: hide the cables under tables