The objective of this project is to and construct creative interactive displays using Arduino/Raspberry Pi controller, sensors, actuators, LEDs and speaker, with light, sound, animation and wireless communications. In light of COVID-19 there should also be a virtual display done at the end to allow for a non-physical experience of the project.

The background would be to create an interactive display that is able to be showcased for IEM’s open house displays.

There are 2 ways that are possible for exploration. The first is a conventional interactive display which depends on light and sound coupled with sensors for activation to create an interactive display. The other would be a tactile interactive display where rather than using light and sound, it uses touch and sound to interact with the audience.

An idea for the first point is to create an IoT pinball machine where the pinball board is physical but the controls are through the user’s mobile phone. This is a bonus during the COVID-19 period as people would not be physically touching the device and only their mobile phones which they already have contact with. If this were to proceed, research would have to be done on the various IoT boards available. Ranging from a Raspberry Pi to a ESP32 controller. Following that, testing and research will be done for how to display the controls on the phone which will have a connection to the various actuators on the pinball machine. Lastly would be the testing of the components and the actual implementation of the device.

An idea for the second point would be since it is to be tactile and sound interaction, the best group of people to cater this towards would be the visually impaired people. The initial idea is to have a clock with numbers represented in braille which would be represented by moving dots. However, further research and interviews would have to be done with visually impaired persons to deem if this idea should move forward. To that end, I have contacted Singapore Association for the Visually Handicapped (SAVH) to seek their advice on this matter. The outcome of this would determine if the FYP would be the IoT pinball machine or the Braille clock.

Refer to TimeSchedule.xlsx for the time schedule