IM3080 Design and Innovation Project (AY2022/23 Semester 1)
Individual Report

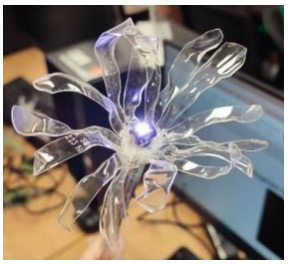
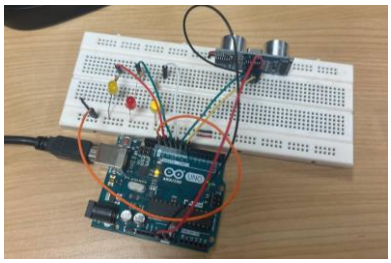
Name: Heng Yin Qi

Group No: 7

Project Title: Floweresсent

Contributions to the Project (1 page)

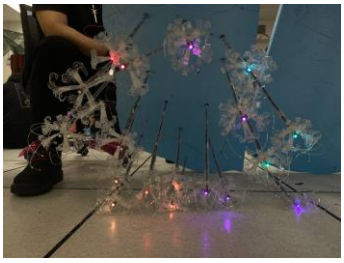
1. **Program Development**
   - Connecting and programming of light controls using Arduino Uno and ultrasonic sensors
   - Develop and troubleshoot light controls using LED Strips for more patterns
   - Composing 7 different pattern using the FASTLED library according to distance
   - Modifying program to activate individual LEDS on strip for more light designs
   - Generating and coding the color palette for the lights design
   - Troubleshooting final master and slave codes


2. **Cross-Team Collaboration**
   - Discuss and design the wiring connections and sensors placement with the sound and design teams
   - Helping with the prototype – creating flowers and building flower pathways
   - Act as bridge between the three teams to ensure smooth communication
   - Preparing documentations for the project
   - Photographer and videographer for the project

3. **Hardware Connections**
   - Preparing materials for wiring connection work with team members
   - Wiring connections and troubleshooting the prototype to ensure that the light designs are running smoothly
   - Troubleshooting final connections and final touch ups





Reflection on Learning Outcome Attainment

Reflect on your experience during your project and the achievements you have relating to at least two of the points below:

(a) Engineering knowledge
(b) Problem Analysis
(c) Investigation
(d) Design/development of Solutions
(e) Modern Tool Usage
(f) The Engineer and Society
(g) Environment and Sustainability
(h) Ethics
(i) Individual and Team Work
(j) Communication
(k) Project Management and Finance
(l) Lifelong Learning

Point 1: Environment and Sustainability

It was in this project that I understand the beauty of sustainability. Whenever I thought of sustainability, I relate it to big projects like solar panels and creating renewable materials. However, through this project, I learn that recycle materials can be transformed into something magical. By creating the project using plastic bottles and pairing it with our skills learnt in IEM – like software and hardware designing, we manage to create Flowerescent. I am glad that our project is beautiful, fun and most importantly, it carries an impactful message to the world – "Recycling is making marvelous out of the discarded".

Point 2: Individual and Teamwork

Working in a group of 4 is difficult, so imagine how much more challenging it is to work in a group of 10. Teamwork was one of the challenges that our group faced, especially between those who are strong and weak in technical skills. Most of us were focusing more on our individual work in the beginning, which led to delayed and misinformation regarding the progress of the project when we need to combine all our works. I act as a bridge between our teams and advise them to reflect on our lack of teamwork and work on creating a more open and engaged communication. In the end, the situation improved, and we are able to all work together and achieved the deadline with a beautiful project.

Point 3: Design / Development of Solution

Before working on our DIP project, I have zero knowledge on how to work with Arduino. Through the 13 weeks of DIP, I went through the Arduino workshop on NTU Learn to learn the basics. I went further into researching how to connect and program our visual designs and understanding the Arduino platform. This helps me understand how to implement the Arduino libraries for more efficiency and how to create more visually attractive light designs. I am also grateful towards my teammates who have better technical skills for guiding me throughout the process. At the end of 13 weeks, voilà! We managed to develop Flowerescent! Who could have believed 13 weeks ago I was a newbie to all of these!