Assignment 3 [CO2,CO3]

Problem

You are to develop an assistive system for users with diverse abilities like visual impairment. The system is a smartphone application that ubiquitously senses the user's distance from any nearby object and the ambient light level through ultrasonic distance sensors and light-dependent resistors (LDR). **You must use any/all smartphone sensors in addition to these 2 sensors in your application.**
Develop an assistive application that can read data from these sensors and assist users in various **contexts**.

While developing the application, you should use the following:

- Arduino Board and programming
- Jumper Wires, resistor
- Ultrasound Distance Sensor
- LDR Sensor
- Built-in smartphone sensors
- Breadboard
- HC05 module
- MIT App inventor

Guidelines:

1. The data collected should only involve the application developers. Data from other participants requires informed consent.
2. Both LDR and Distance sensors should be used by the application.
3. The built-in sensors of the smartphone should be used.

Grading will be based on:

1. Interface Design. The application interface should be designed professionally- 5 marks
2. Accessibility Features: The app must have features especially designed for the chosen user group with specific impairment - 5 marks
3. Validity of the solution: The choice of the problem and solution should be relevant - 5 marks
4. Critical observation: The system should provide advantages over using distance and LDR sensors only. You should be able to compare the performance of the application with that developed in Assignment 2.

Submission

The application(s) should be demonstrated in class on **17th March 2025**. The following files should be submitted to Google Classroom on or before 17th March, midnight: MIT app (.aia file), Arduino code (.ino file), and circuit diagram (.png file).
No marks will be awarded unless both the in-class demonstration and the submissions are completed