Next Step

1. Hardware Improvements: Custom PCB for Display Device + Redesign Enclosures

Design and implement a custom PCB for the display device to streamline the circuit layout, reduce wiring complexity, and improve overall reliability.
Solution: Redesign the enclosures for both the display and sensor devices to enhance aesthetics, durability, and user experience. Ensure the new design accommodates future hardware upgrades.

2. Power Supply Optimization for Sensor Device: Input Voltage Issue

Investigate and resolve the power supply issue for the sensor device. Currently, the OV2640 camera requires a 5V input via the Type-C port, which limits portability.
Solution: Integrate a voltage converter (e.g., step-up or step-down module) to allow flexible power input options (e.g., battery-powered or external adapters).

3. Data Visualization & Reporting

Implement a feature to track cumulative working hours and generate visual reports (e.g., charts, graphs) that can be saved and shared via mobile or computer.
Solution:Explore data export options and design a user-friendly report format.

4. UI Enhancements

Improve Display UI: Redesign the display device's user interface to make it more visually appealing and intuitive. Focus on readability, aesthetics, and user interaction.
Upgrade LCD Screen: Replace the current 2-inch I2C screen with a larger SPI-based display for better visual output and user experience. Ensure the new screen is compatible with the Xiao ESP32-S3 and integrates seamlessly with the system.

5. Testing & Iteration

Conduct thorough testing of all hardware and software updates to ensure functionality and reliability.