



# ProGear Smart Bag

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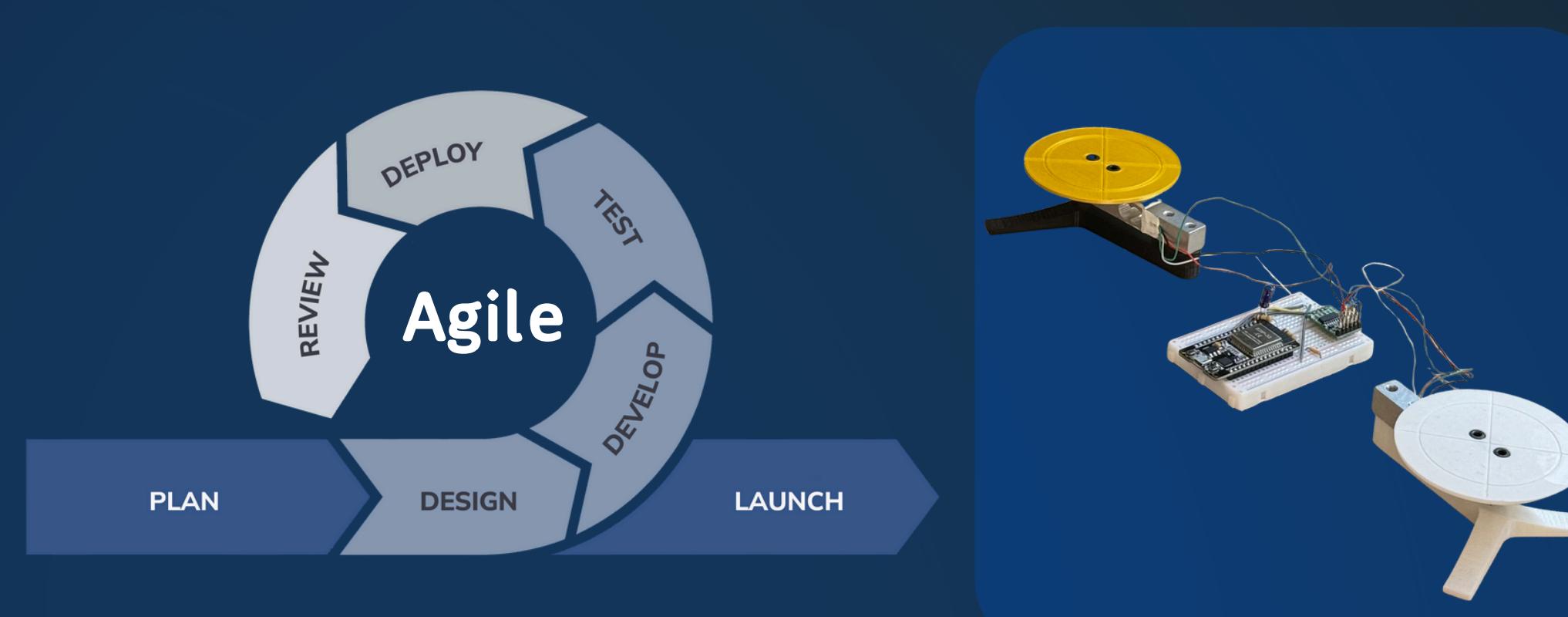
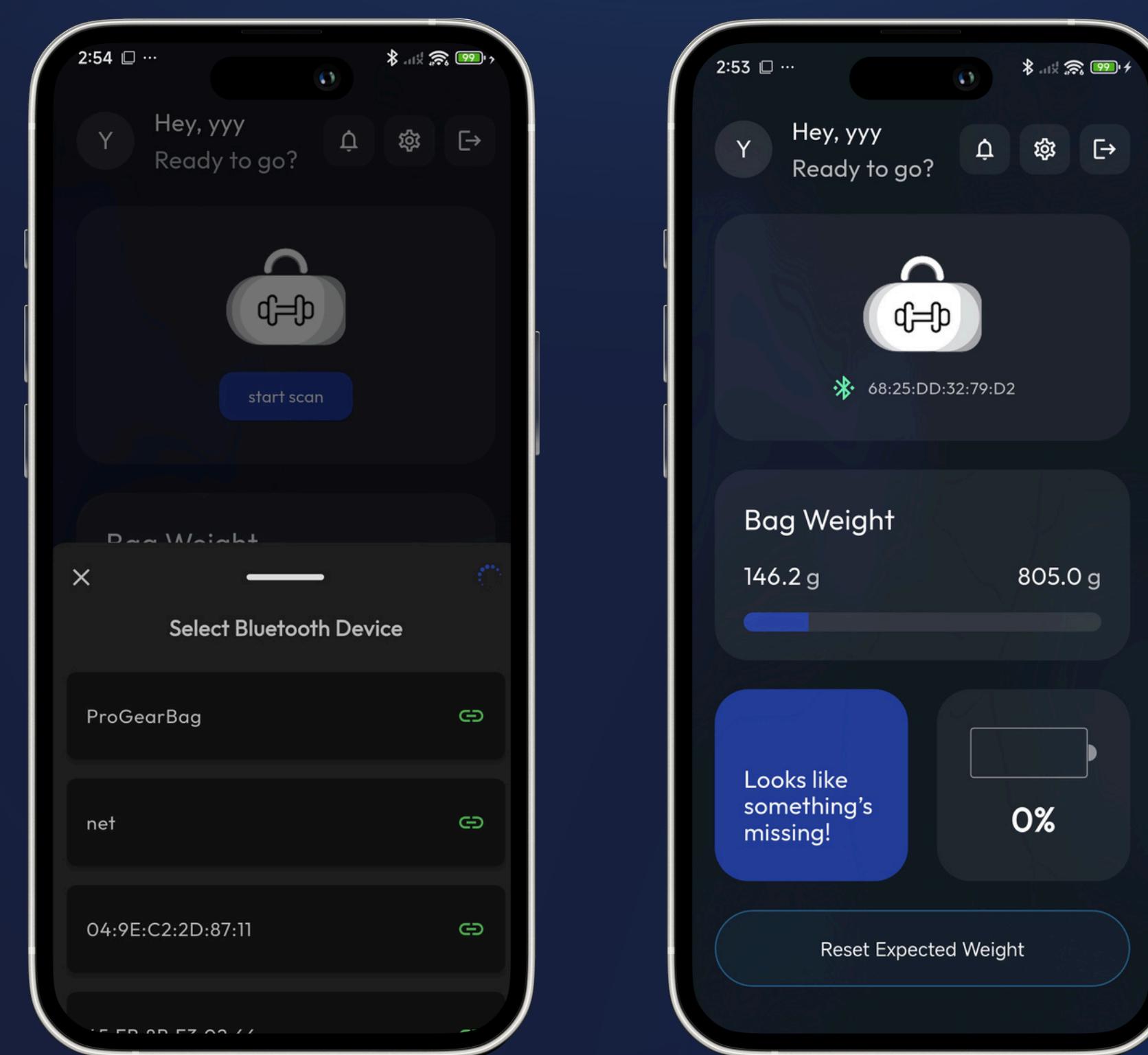
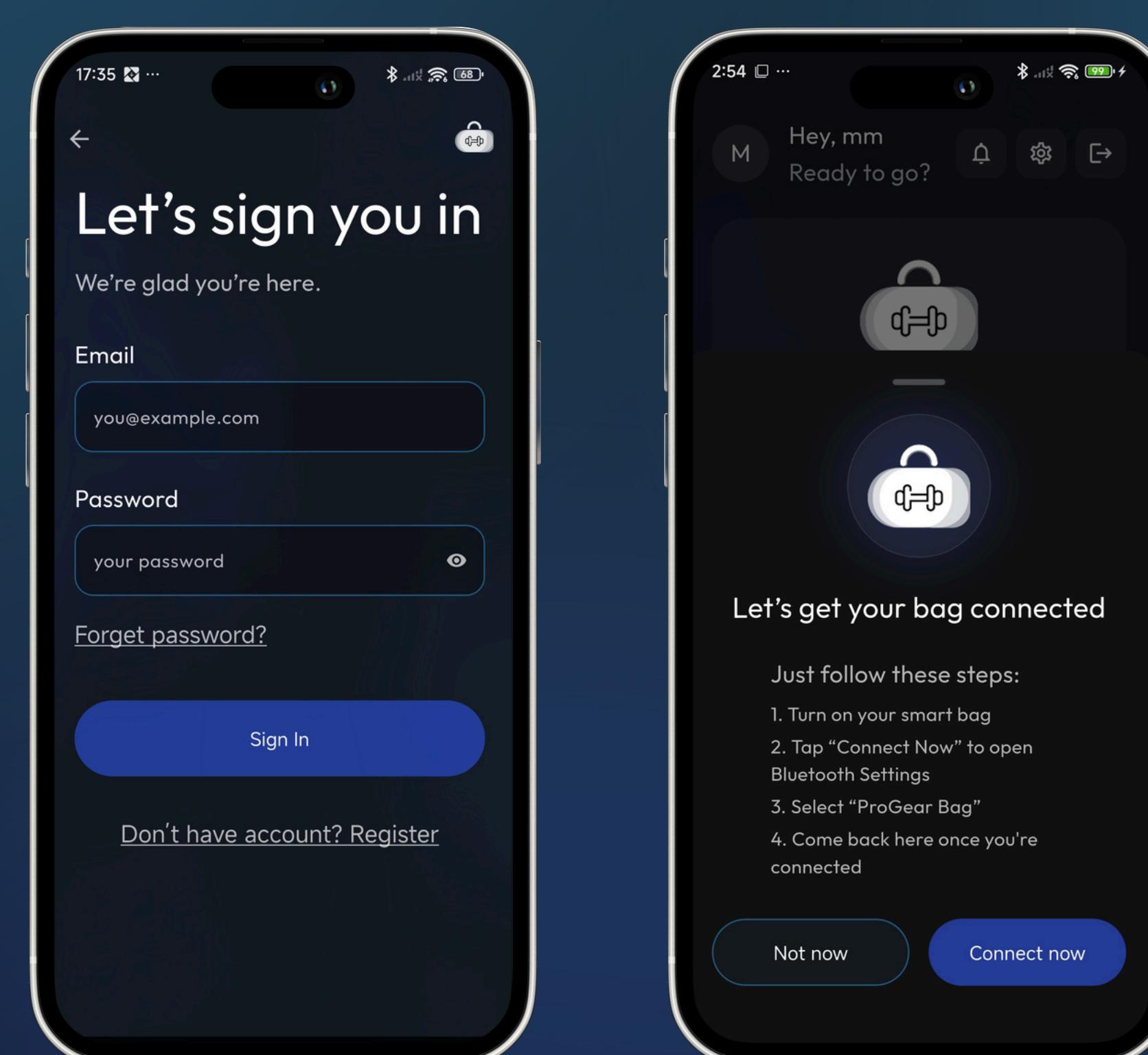
## Introduction & Background

Athletes often forget essential training gear, and existing solutions are either not portable or require item tagging. The ProGear Smart Bag provides a practical alternative by using load cells and an HX711 amplifier to measure total bag weight and compare it with a predefined expected value.

An ESP32 microcontroller processes the readings and transmits real time data to a Flutter mobile application via Bluetooth Low Energy.

Current literature shows no portable, weight based system designed to verify gear completeness, which highlights the need that this project addresses.

## Results



## Conclusion & Future Work

The project demonstrates that weight based verification is a practical and reliable approach for identifying missing athletic gear. The system successfully integrates load cell sensing, HX711 amplifier, ESP32 processing and Bluetooth Low Energy communication, providing accurate real time readings through a Flutter mobile application. The results confirm the feasibility of using a portable, tag free solution to address the gap identified in existing systems. Future improvements may include expanding the hardware to support additional sensors, enhancing the enclosure design, incorporating cloud based analytics and exploring AI based techniques to improve gear detection and prediction.

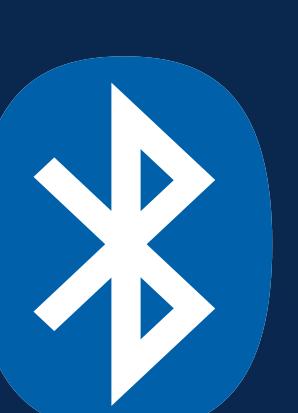
## Tools



Supabase



Flutter



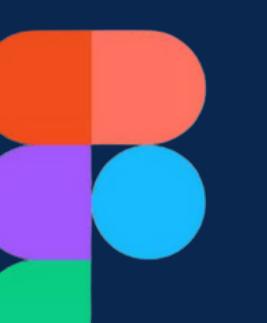
BLE



GitHub



Jira



Figma

## References



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## Acknowledgments

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