

Pass Task 3.1: Research Questions

1. In what ways does 3D LIDAR technology enhance gait monitoring compared to traditional methods?

Description: This question examines LiDAR's effectiveness in providing detailed joint movement analysis, posture assessment, and balance evaluation.

Motivation: Assessing the benefits of 3D LIDAR technology contributes to understanding its role in advancing gait monitoring and health assessment capabilities.

2. How can machine learning algorithms be optimized for real-time analysis of gait patterns in outdoor environments using IoT data?

Description: This question aims to explore the challenges and opportunities in enhancing machine learning algorithms for efficient and timely analysis of gait patterns.

Motivation: To develop machine learning algorithms that are tailored for real-time analysis of gait patterns in outdoor environments using IoT data as traditional approaches often rely on controlled environments and wearable devices.

3. How can the IoT framework integrate with clinical correlations to detect early signs of gait disorders?

Description: This question addresses the need to establish connections between the collected gait data and clinical indicators.

Motivation: To establish direct correlations between gait disorders and specific gait patterns, enabling accurate classification of disorders based on identifiable gait characteristics.

4. What challenges and opportunities exist in implementing IoT-based gait measurement systems in frequented outdoor areas?

Description: This question explores the practical challenges and opportunities associated with deploying sensor-equipped outdoor landscapes.

Motivation: Understanding these factors is crucial for the successful implementation and scalability of the proposed IoT framework.

5. How does the proposed IoT-based framework compare with traditional wearable technology in terms of accuracy and usability for gait analysis?

Description: This question is inspired by the observation that existing research predominantly centres around wearable technology.

Motivation: To benchmark the proposed IoT framework against traditional approaches, evaluating its accuracy and usability in unobtrusively monitoring gait in outdoor environments.