

Project Overview

- Device Name: **Ambler – Gait Therapy Overhead Track System**
 - Purpose of the Device: Assist patients with impaired mobility during gait therapy by unweighting a part of their body weight, providing support, safety, and enabling controlled rehabilitation.
 - System Components (Hardware):
 - Overhead enclosed C-track with sliding trolley
 - Winch system (motor-driven) for unweighting
 - Load cell (S-type) with HX711 amplifier for weight sensing
 - OLED screen for on-device display
 - Motor driver and control PCB
 - Mobile app for controlling the winch system and monitoring session data
 - Harness attached via two-point shoulder contact with hanger
 - User Types:
 - Therapist/Admin: Sets and controls session parameters
 - Patient: Subject being treated
 - Technician (Optional): For diagnostics and system calibration
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2. Application Platform

- Type: Mobile application (apk)
 - Backend Requirements (Optional):
 - Local control (offline usage)
 - Cloud sync and backup (optional future phase)
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3. Software Functional Overview

A. Primary Functions:

- Control motorized winch to lift or lower the patient
- Monitor and display real-time weight data (total and lifted)
- Adjust unweighting percentage
- Store and display session history
- Emergency stop and safety interlocks
- Remote control for trolley movement (if added)

B. App Modules:

1. Home / Dashboard

- **Live session status** (Active/Idle)
- **Real-time data:**
 - Speed (m/min)
 - Unweighting Percentage (%)
 - Lifted Weight (kg)
 - Total Patient Weight (kg)
 - Duration of session (minutes)
 - Distance covered
- **Control Buttons:**
 - Start / Pause / Stop
 - Increase / Decrease Unweighting

- Emergency Stop

2. Patients

- **Patient List View** with search/filter
- **Add New Patient** button
- Each Patient Record Includes:
 - Name
 - Age
 - Mobile number
 - Height / Weight
 - Diagnosis
 - Therapy goal (if any)
 - Date of registration

3. Patient Profile (on selection)

- Overview tab:
 - Summary of progress (steps, time spent, average speed, etc.)
 - Progress chart (session wise/weekly/monthly)
- History tab:
 - Session logs with date/time
 - Session duration
 - Speed and support settings used
 - Notes or observations
- Edit tab:

- Update patient info
- Add remarks / therapy notes

4. Session Logs

- List of past sessions (filterable by date/patient)
- Export to CSV/PDF
- Tap to view detailed session metrics
- Graphical reports

5. Device Settings

- Wi-Fi connection management
- System status (Connected/Disconnected)
- Tuning controls (for winch/speed thresholds)
- Maintenance logs

6. Notifications

- Next session Recommendation
- Alerts for device errors or disconnections
- Milestone achievements (e.g., 10,000 steps reached)

7. Admin / Settings

- User account management (for therapists)
- Dark/light mode
- Data backup & restore

- Export patient data
- App version, contact support

Parameters & Data Points to Track

- Patient Name & Mobile number
- Session date & time
- Session duration
- Unweighting level used (%)
- Distance covered (km)
- Lifted weight (kg)
- Actual weight (kg)
- Therapist notes
- Custom flags (e.g., fatigue, fall risk, etc.)



Progress Tracking Features

- Line graphs (unweighted load vs speed)
- Weekly/Monthly progress summary
- Goal completion progress
- Printable summary for patient reports