AanganGrow: Accessible Urban Gardening and Soil Health Monitoring Solution

Introduction

AanganGrow is a smart and inclusive urban gardening solution designed to empower elderly individuals, specially-abled people, and underserved communities. The system combines low-cost IoT-based soil monitoring tools with an accessible app interface that guides users through the process of growing their own food independently and sustainably in limited urban spaces.

Problem Statement

Urbanization and modern lifestyle have distanced people—especially the elderly and differently-abled—from nature and food production. Most urban dwellers lack the time, space, and knowledge to grow food at home, leading to dependence on external sources, reduced sustainability, and weakened food security.

Proposed Solution

AanganGrow bridges this gap by offering a user-friendly gardening kit and mobile app that work together. The gardening kit includes smart soil sensors, biodegradable pots, and vertical planters. The app offers voice-assisted tutorials, soil health data visualizations, AI-based crop suggestions, and reminders, all designed with accessibility in mind.

Key Features

- Soil moisture, pH, and temperature monitoring via sensors
- Voice-controlled mobile app with large fonts and multilingual support
- AI-driven plant care recommendations based on sensor data and regional climate
- DIY educational kits for schools and community centers
- Data dashboard for caregivers and municipal bodies

Technology Stack

- Hardware: Soil sensors, Arduino/ESP32, Wi-Fi Module
- Software: React Native (App), Firebase (Database), Python (Backend), ThingSpeak (IoT dashboard)
- AI: Crop recommendation engine using historical soil and climate data

Impact

AanganGrow promotes sustainability, inclusivity, and food security. It enables independent gardening, boosts mental health, fosters intergenerational learning, and supports India's goals for urban resilience and smart cities. By simplifying urban farming, it connects people back to nature.

Current Progress

- Working prototype with functional soil sensors and data dashboard
- Mobile app UI prototype and voice interaction module in progress
- Tested on real plants with successful readings and crop suggestions
- Positive feedback from elderly beta users and community garden groups

Future Scope

- Expansion into smart irrigation
- Integration with local Krishi centers and government health schemes
- More AI insights based on satellite data and urban weather APIs

Unique Selling Proposition (USP)

Unlike generic gardening kits, AanganGrow is hyperlocal, inclusive, and accessible. It brings together technology, tradition, and community support into one integrated, easy-to-use platform.