CSE471: System Analysis and Design
Assignment on Functional Requirements
Proposed Project Title: Augmented Reality-based gardening planner and guidance

Group No: 05, CSE471 Lab Section: 04, Fall 2025	
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Tech Stack:

- Language: JavaScript
- Frontend Framework: React.js
- Backend Framework: Express.js (running on Node.js)
- Styling: TailwindCSS
- Database: MongoDB
- ODM (Object Data Mapper): Mongoos

Functional requirements:

Module 1

1. [Member-1] **Plant Database Management:-** Providing a complete, searchable Plant Database where users can explore plants, view details like sunlight, water needs, type, and season, and optionally add favorites to “My Garden”.
2. [Member-2] **AR Weed Identification feature:-** Implementing a Weed Identification Tool using Augmented Reality with two modes, Manual and AI-assisted to help users recognize and learn how to remove weeds through AR overlays or AI-based image recognition.
3. [Member-3] **Companion Planting Recommendation System:-** Users get Companion Planting Suggestions that show which plants grow well together or should be avoided by optional 2D or AR layout previews for garden planning.
4. [Member-4] **AR Virtual Plant Placement:-** Enabling 3D Virtual Plant Placement, allowing users to visualize plants in their real environment.

Module 2

1. [Member-1] **Soil Testing Guidance (Computer Vision):-** Soil testing Guidance using Computer Vision Technology, which will overlay soil health instructions or visual cues to help users test soil and improve quality.
2. [Member-2] **Water and Fertilizer Requirement Tracking:-** Tracking water and fertilizer regulators, that is, different plants need different amounts of water, different fertilizers, so users can search the essential quantity required for the specific plant.
3. [Member-3] **Plant Growth Visualization:-** Tracking the growth of the plant, that is, users can visualize the expected growth, spread of plants over months or years.

4. [Member-4] **Seasonal Planting and Harvest Calendar:-** Suggests the best time for planting and harvesting, where users will be able to monitor the right time of harvest and get the suggestions of variety plantations in the ideal season.

Module 3

1. [Member-1] **Garden Snapshot Sharing:-** Allowing users to capture and share garden snapshots directly to social media platforms with optional captions and plant tags.
2. [Member-1] **Weather-Based Gardening Alerts:-** Providing Weather-Based Gardening Alerts to notify users about important climate conditions that affect plant care.
3. [Member-2] **User Forum & Community Interaction:-** User forum for collaboration, idea sharing, and reviewing. Users will be able to buy their desired plant based on the location of their garden based on the experience of other users.
4. [Member-2] **Garden Task Checklist Management:-** Implementing a Garden Task Checklist where users can add and manage routine gardening tasks for better garden maintenance.
5. [Member-3] **E-Commerce Plant Store:-** E-commerce store for users to buy recommended plants. Check-out will be using both cash and card. Vendors will be able to sell their plants, and users will buy those.
6. [Member-3] **Product Search, Sort, and Cart Management:-** Users will be able to search, sort, and filter the plants on our e-commerce website. Users can add to and remove from the cart.
7. [Member-4] **Pest and Disease Detection:-** Using this, users will be able to detect the disease of the plant by capturing a photo of the leaf and get informed about the exact plant disease.
8. [Member-4] **AI Plant Health Assessment:-** Building AI plant health assessments. Users capture live images and detect deficiencies, and get preventive measures.