【Introduction to creation】

【Title of the Invention】

Grid farming utilizes renewable energy to create AI-based optimized environments for different seeds, both indoors and outdoors. It establishes a system that efficiently supplies water and nutrients, allowing users to control the environmental systems through a mobile app.

[Technical Field]
The present invention relates to a home smart farm, and more specifically, to a smart farm that can be used both indoors and outdoors. It operates using sustainable energy sources such as solar power, wind energy, and rainwater. The system is designed to create an optimal environment for plant growth through seed analysis and environmental optimization, moisture management, nutrient supply, pest control, and environmental regulation using a central control unit and distributed sensors. Additionally, it employs AI to learn user behavior and system performance, aiming to enhance user convenience in home smart farming.

[Background of the Invention]
The background technologies relevant to the invention include energy conversion technologies specific to various energy sources, energy storage technologies, power management and control systems, energy prediction and optimization, as well as monitoring and management systems.

[Prior Art Literature]
[Patent Literature]
(Patent Literature 1) South Korea Patent Registration No.

[Content of the Invention]
[Problems to be Solved]
The objective of the present invention is to utilize AI plant analysis technology to make it easier for beginners to grow plants. Additionally, it aims to provide a machine that operates using environmentally friendly energy, causing no harm to the environment and requiring no separate charging.

[Means for Solving the Problems]

[Effects of the Invention]
The smart grid farming system of the present invention utilizes renewable energy to protect the environment while enabling individuals to easily grow plants at home. This system offers the following benefits at personal, community, and national levels.

[Brief Description of the Drawings]
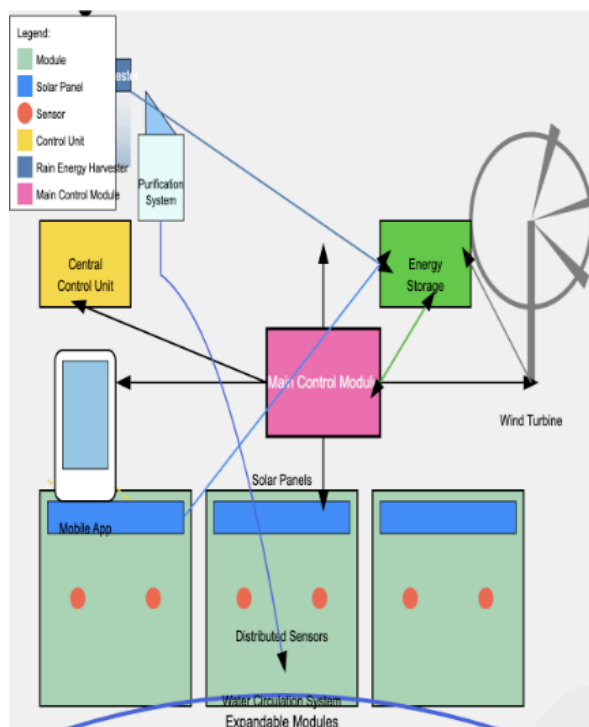
Drawing 1)
The drawing illustrates the connections between the hardware, software, and functional systems in a home smart farm. Devices that generate renewable energy, such as solar panels, wind turbines, and hydro generators, channel energy to a storage unit before it is sent to the main control model. The data is then transmitted to the central control unit and the mobile app, providing users with updates and suggestions.
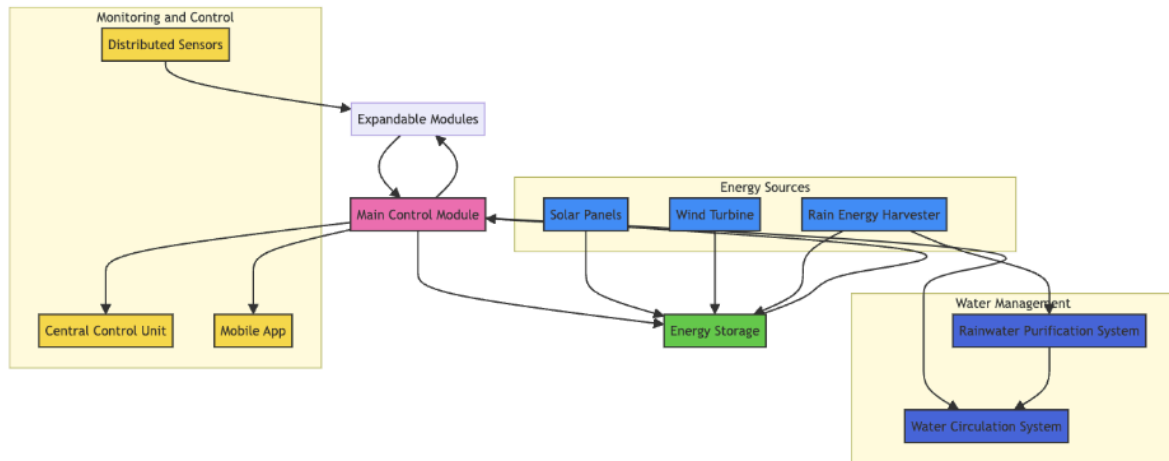
Drawing 2)
The drawing illustrates the hardware connections within a home smart farm. It shows how sustainable energy sources—solar power, wind energy, and rainwater—are utilized to store energy. This energy is then used to communicate with the mobile software through the main control module and to control sensors via additional modules, creating an optimal environment for plant growth. Additionally, rainwater collected during the processing phase is purified and recycled to supply water to the plants.

[Detailed Description of the Invention]