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(57) Abstract :
The present inventio provides an IoT-enabled system (1) for monitoring a solar-powered water pump, featuring a solar panel (2) for electricity generation and a set of sensors that include water level, soil humidity, and light-dependent sensors. It also comprises a motor driver (6), a water pump (7), a power supply module (8), and a remote monitoring controller (9). The controller (9) facilitates real-time tracking of water usage and operates as follows: it activates the water pump in solar mode when sunlight intensity exceeds a threshold, uses the main power supply mode otherwise, automatically initiates the motor driver if soil moisture is insufficient, sends user notifications upon automatic activation, safeguards the area by turning off the motor driver in the presence of rain data, and assesses crop water requirements based on moisture levels, deactivating the motor driver as needed. This system integrates solar energy harvesting with data-driven monitoring, ensuring efficient and adaptive water pumping in various conditions.

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