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An Intelligent Hydroponic Farm Monitoring System Using IoT

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Data, Engineering and Applications

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Abstract

Traditional farming is a process in which man works the soil for planting seeds or rearing animals, either to provide food for himself and his family or for business. The traditional farming system faces myriads' challenges ranging from difficulty in getting good soil, high cost of plowing and weed removal, difficulty in pest control, and plant monitoring. To solve these myriad's challenges, technological innovation has ushered in the various eco-friendly system of farming. Prominent amongst this new method of farming is hydroponics. Hydroponics uses nutrients in solution instead of soil to grow a plant. Practicing such a system of farming among peasant farmers from developing countries demands huge capital investment. In this paper, we propose a cost-effective and free resource Internet of Things (IoT) based system that smartly monitors a hydroponic farm. The designed solution uses an ATmega328P microcontroller connected to a sensor network with connectivity to the internet. These sensors read the humidity, temperature, pH value, dissolved solids, and water level of the farm for efficient monitoring. In addition, the system provides an alert to a remote user through email, and a buzzer sound for on-site supervisors when there is a change in measured parameters that may be detrimental to plant growth and yield.

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