REPUBLIC FAR AWAY WITHIN THE TERRITORIES FARMING ON THEIR FARMS SMART IRRIGATION SYSTEM AND HER STRUCTURE ALGORITHM BLOCK SCHEME

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Abstract:

This article Arduino microcontroller and many devices (humidity, temperature, pressure) and water flow using sensors smart irrigation system how to build explains. Our irrigation system of the soil water balance of determination clear method automatic accordingly unites water in the content to vibrations answer. So this how as better our work possible is an example of measurements accuracy increase, maybe decisions automation through irrigation systems.

Previously farmers limitedness because of laborious tasks solution they do need was technology. First village farm revolution new technologies tractors (like) appear to be opportunity These farmers for sharp changes means because they much effective to be possible was. The present This is how we are today. digital to the revolution related was third village farm revolution from the head is forgiving. New appearance was (and arrival need technologies the world fundamentally is changing farmers harvest cultivation method.

Automated water supply system management device modeling and his/her algorithm block scheme to establish — village on the farm water saving and effective management for very important. Below this topic according to necessary data, schemes and recommendations presented I am. Automated water supply system (AWSS) — this land under water, water warehouses or pump stations automatic accordingly management through village on the farm water supply to

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optimize aimed at is a system. Such systems, typically PLC (Programmable Logic Controller) or SCADA (Supervisory Control and Data Acquisition) systems using managed.

Algorithm block scheme - a vtomatized water supply system for following main blocks own inside received scheme to compose possible:

1.   Sensors block :
o   Earth humidity sensor
o   Pressure sensor
o   Water level sensor
o   Temperature and humidity sensor <u>ar</u>
2.   Data again work block :
o   Analog-to-digital converter
o   Data filtering and analysis they would do
3.   Management block :
o   PID (Proportional-Integral-Derivative) controller
o   Fuzzy Logic or with slide regime supervisor
o   To the model based prediction (e.g. LSTM)
4.   Execution block :
o   Pumps management
o   Valves management
5.   Signaling and warning systems. Communication block :
o   Through IoT (Internet of Things). information transmission
o   Mobile applications or web interfaces monitoring via

Scientific research and practical examples:

•   Pump at the station Automation: In research pump stations water transmission power improve and highway pipes permanent accordingly water with fill in the required to pressure turning to consumers send system working released.

•   IoT and neuron networks based on pumps management: IoT technologies and the Multi-Layer Perceptron (MLP) neuron network using water pumps automatic accordingly management system working This system is sensors using measured temperature, humidity and land humidity such as information based on water supply managed.

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- Based on LSTM to the model based forecasting: from LSTM (Long Short-Term Memory) model used without, land-water-atmosphere system forecast to take and optimal irrigation schedule designation Model forecasting for system working released.

Block diagram sample at home in the link automated irrigation system for block scheme you see possible:
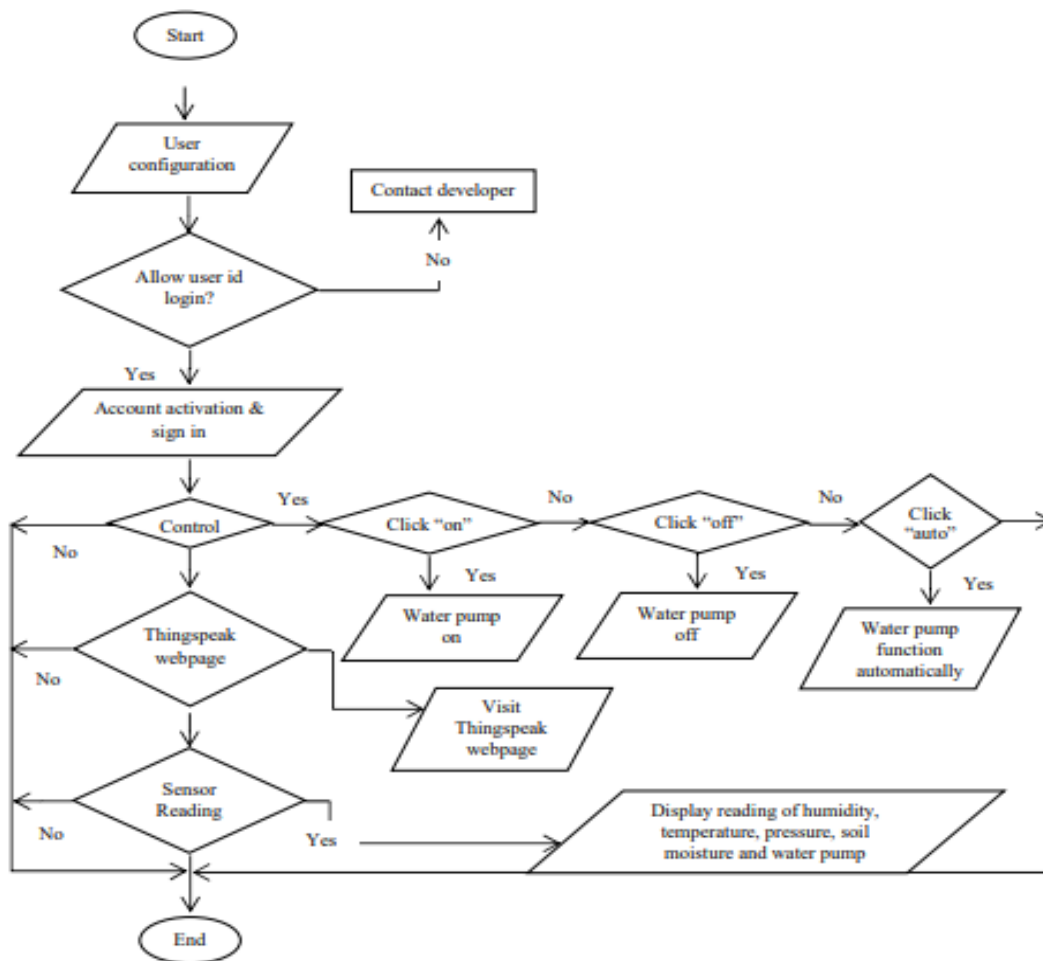

Figure1. Flow chart of the smart irrigation system

Recommendations:

- Sensors: Earth humidity, temperature, moisture and pressure such as parameters measurement for high accurate sensors choose.

- Management algorithms: such as PID or fuzzy logic flexible management algorithms apply.

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- IoT Integration: Data in real time transmission and monitoring for IoT from platforms use.
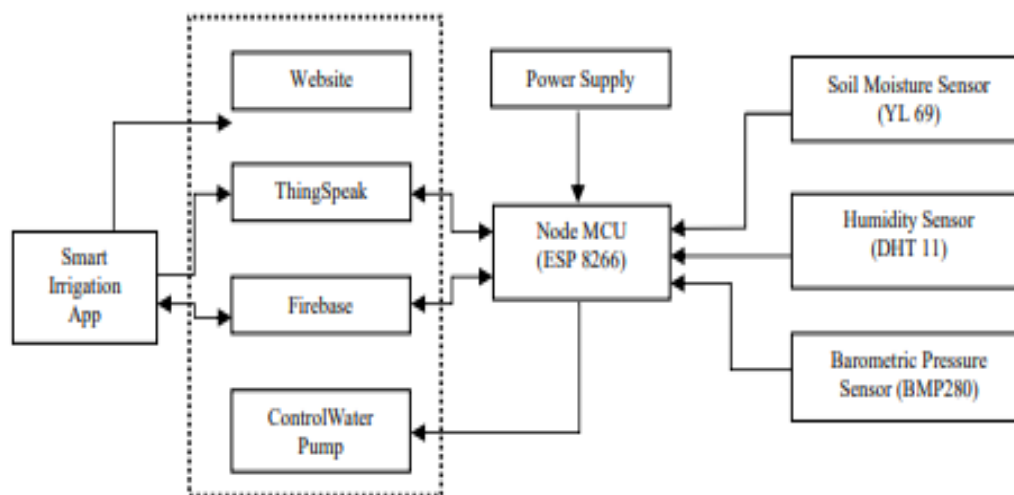- Energy Efficiency: Water supply system energy efficiency increase for energy saver methods apply.

Figure 2. Block diagram of the smart irrigation system

Conclusion as In other words, Smart irrigation system irrigation observation and control to do to the purpose answer gives farming field system. It integrates Internet of Things technology based one how many sensors: (i) humidity sensor , (ii) ground humidity sensor and (iii) the situation management for pressure sensor farming of the field from the soil. The same at the time this sensor via Wi-Fi to the internet connected module. This is mutual related activity irrigation to the system additional sensitivity is to give. Information in the cloud collected (Thing Speak and Firebase) download is taken and graphic in appearance will be displayed form. User program from the system shown report through irrigation system to observe possible mobile on the platform. Application sensors their studies show and water management for works emergency in the situation pump. This user warning and from the system use makes it easier.

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References

1. Abdurazzakov JT , " Irrigation" systems " Fundamentals of " . Tashkent: Teacher, 2018. This in the textbook irrigation systems theoretical basics, types and their work principles in detail illuminated.

2. Abdurazzakov JT, "Automated irrigation systems" . Tashkent: Teacher, 2020. In the article automated irrigation systems structure , components and their efficiency increase methods seeing released.

3. Abdurazzakov JT, "SCADA systems and their irrigation in the field" Application of SCADA systems". Tashkent: Teacher, 2021. irrigation in the processes their application , advantages and efficiency about in detail information given.

4. Abdurazzaqov JT, "Drop by Drop" irrigation systems: theory and practice". Tashkent: Teacher , 2019. Drop by drop irrigation systems work principles, advantages and practical application about information cited.

5. Abdurazzakov JT, "Irrigation" in systems energy efficiency "Improvement". Tashkent: Teacher , 2022. Irrigation in systems energy efficiency increase methods and technologies illuminated.

6. Abdurazzakov JT, "Earth" under waters management systems". Tashkent: Teacher, 2023. Earth under waters management systems structure, performance principles and efficiency about in detail information given.

7. Abdurazzakov JT, "Irrigation" in systems automation economic aspects". Tashkent: Teacher, 2021. Irrigation in systems automation economic efficiency, costs reduce and profit increase methods seeing released.

8. Abdurazzakov JT, "Irrigation" in systems information technologies role". Tashkent: Teacher, 2020. Information technologies irrigation in systems their application, efficiency in progress place about information cited.