THE ROLE OF INTERNET OF THINGS IN AGRICULTURE

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IoT solutions aim to help farmers bridge the gap between supply and demand, ensuring high yields, profitability, and environmental protection. IoT technologies in agriculture include specialized equipment, wireless communication, software, and IT services [1, 2].

The purpose of the report is to analyze using the Internet of Things in agriculture.

Sensors are installed on tractors and other agricultural equipment to monitor the speed of movement, the amount of fertilizer sown and harvested crops. Livestock breeders also use special sensors: they monitor cattle behavior, activity during the day, body temperature, and location. Such devices can be installed both inside and on the animal. The data collected helps increase production productivity. Crops such as corn and wheat compete in the fields with weeds for water, nutrients and space in the sun. Currently, the most effective means of controlling unwanted plants is the widespread use of herbicides, but this method does not take into account the fact that weeds grow unevenly. As a result, crops and fertile land also fall under pesticide treatment, which can be harmful to the environment. Using cameras with special sensors, the new smart spray technology distinguishes weeds from crops. Only weeds are then treated with pesticides using a special pollination method, greatly reducing the harm caused to the environment. The technology works as: before entering the field, the farmer uses special equipment to assess the situation in the field and receives recommendations on the most appropriate time to kill the weeds. In just one action, unwanted plants can be detected and spot-sprayed. A multitude of cameras, scattered along the entire length of the sprayer, take many pictures of the weed, which allows you to determine its type and the best method of action. While the sprayer is moving around the field, the right amounts of herbicides in the right proportions are sprayed, according to predetermined parameters. Thus, weeds are treated with the compound and free areas are avoided, all in just a few moments.

Farmers have started to realize that the IoT is a driving force for increasing agricultural production in a cost-effective way.

References

1. Ткачов В.М. Технологія тимчасового надання послуг доступу до мережі Інтернет у громадських місцях / В.М. Ткачов, Д.Є. Мітін, Я.В. Дух // 22 Международный молодежный форум "Радиоэлектроника и молодежь в XXI веке". Сб. материалов форума. - Харьков: ХНУРЭ. - 2018. – С. 293-294.

2. Tkachov V. Interval Evaluation of the Survival Rate of the Computer Network On the Basis of Highly Mobile Units With Normal Distribution of Work / V. Tkachov, O. Yeroshenko, L. Bukharova // Trends in science and practice of today. Abstracts of V International Scientific and Practical Conference. Ankara, Turkey. 2021. Pp. 409.