Ministry of Education of the Republic of Belarus
Educational Institution
Belarusian State University of Informatics and
Radioelectronics

UDC 004.72

Hameed Osama Majid

ORGANIZATION OF NETWORK INTERNET OF THINGS

ABSTRACT
For master's degree
Specialty 1-45 80 01 Infocommunication systems and networks

_____

Scientific Supervisor:
Vishniakou Uladzimir Anatolievich,
Doc. of Sc., Professor

Minsk 2021

INTRODUCTION

Modern networks with letters, unifying the means of sex. Implementation of the concept of building the Internet of things (IoT). The development of IoT includes the development of both technologies for receiving information and technologies, and methods for organizing channels and communication networks for data transmission between the elements of these networks. The features of the IoT networks are largely determined by the features of applied tasks and the scope of their application. These features consist both in the methods for obtaining information and the formation of transmitted messages and in the method of building the IoT networks themselves. The latter can be built as information collection networks (monitoring) and as information distribution networks.

The concept of IoT is based on the so called multi– agent technologies that allow you to relate the real world with virtual. For each participant in the physical world (machine or person), a software agent is established an object from the virtual world with the artificial intellectuals, which is responsible for the interests of the real participant in Internet reality. The virtual world copies our lives, but the philosophy is much easier: participants (hereinafter – agents) follow in advance established rules.

Agents take data from the outside world, process them and plan actions that are transmitted to the real world. That is, in an example with a coffee maker, the coffee beans agent cooperates with the sugar agent, their requests will fall to the shopping agent, which will inform a person about the need to replenish reserves or even order delivery with a loaf at time and circumstances.

Scope of IoT use is life. TV, refrigerator, printer and the whole "Smart Home" system can be brought to full automation. With the connection of Yves, a person will get rid of obsessive thoughts (whether it has forgotten to close the door or turn off the plate) – all the information can be seen in the smartphone and remotely launch an unfinished algorithm. And the "smart" vacuum cleaner will notify about the found golden earrings, which rolled behind the chair.

In this dissertation there was an overview of the basic concepts of IoT (chapter 1). A model and structure for monitoring the parameters of the smart home using the IoT network and consider the main components of such a network (chapter 2). To implement such a network, a cloud platform of the company Amazon is

presented to work with the network and demonstrated the process of creating a network of Internet of things and adding devices to it using a PT modeling tool. (chapter 3).

GENERAL DESCRIPTION OF WORK

Goal and objective

The aim of the dissertation is the presentation of the model and tools of the IoT network to manage the smart home.

To achieve this goal, it is necessary to solve the following tasks:

1 Analyze the methods and means of building IoT networks;

2 Present the structure of the IoT network to build a smart home system;

3 Select and describe the IoT cloud platform.

4 Develop an IoT network using a tracer package.

Positions presenting for defense

1 Network structure Smart home that allows to implement automation technology 4.0.

2 Structure and components of the cloud platform.

3 The structure and implementation of the network is a smart home on the basis of PT funds, which made it possible to implement a new management technology.

Approbation of dissertation and information about the use of results

The main provisions and the results of the dissertation work were reported and discussed on 57 Scientific Conference of PhD students, master students and students of BSUIR. Minsk , BSUIR, 2021.

SHORT CONTENT REVIEW

We have explained the concepts of IoT, the protocols and uses of IoT in various fields, and we talked about the structure of IoT and the networks used in it. And the uses of the Internet of things at home, and we talked about managing home networks in the Internet of things and about algorithms, and we talked about the Amazon company and

the services it provides, and we made a model in the packet tracer program to manage the smart home and how to deal with it and install the IP and how it works Configure and know the devices connected to the gateway and know their condition and state. In this dissertation there was an overview of the basic concepts of IoT (chapter 1). A model and structure for monitoring the parameters of the smart home using the IoT network and consider the main components of such a network (chapter 2). To implement such a network, a cloud platform of the company Amazon is presented to work with the network and demonstrated the process of creating a network of Internet of things and adding devices to it using a PT modeling tool. (chapter 3).

CONCLUSION

1. An overview of the basic concepts of Internet networks (IoT) is presented. The architecture of such a network, interaction, cognitiveness is considered. The IoT network devices are able to work automatically, but the user can manage them, including remotely. As part of "Automation 4.0" for remote monitoring and control of the quality of parameters in the house, use the technology of IoT.

2. The most important factors affecting the health, productivity and quality of human life are the conditions in which it is: air quality, which consists of a comfortable ratio of temperature, humidity, flow rates and the level of harmful impurities in the air; Lighting indoors and adjacent territories; water and heat supply; Safety of man and home. All this parametrs are controlled by a smart home IoT network.

3. An analysis of such networks, intelligent components, sensors, executive devices of the building management systems are presented; The structure of the security subsystem is interaction with the lighting subsystems, access control and protection; Use of platforms to control the system of an intelligent building.

4. The model of such an IoT network for smart home based on a multi-agent technology is presented. The structure of this IoT network is proposed, which includes the parameter sensors in the house, gateways, the cloud structure in which the server platform is rented [1-A].

5. To implement the IoT network for control of home parameters is proposed to use a cloud platform (a managed service manager, which operates as a message center for bilateral communication between the Internet application and devices).

6. The analysis of trends in the development of the Internet of Things was carried out, which allowed us to determine the main directions of the development of communication networks, to identify the most promising ones and to assess the relevance of IoT. The analysis of technologies for building Internet of Things networks using IoT services for industrial, consumer and commercial solutions, namely Amazon Web Services IoT, was also performed. A model of a smart home is developed and an example of its configuration is given using PT instrument [2-A].

AUTHOR PUBLICATIONS

1. Vishniakou, U.A. Organization of IoT network / U.A. Vishniakou, M.H. Usama // Materials of 57 Scientific Conference of PhD students, master students and students of BSUIR. Minsk, BSUIR, 2021. – P. 81.

2. Vishniakou, U.A. Design of IoT network / U.A. Vishniakou, M.H. Usama // Materials of 57 Scientific Conference of PhD students, master students and students of BSUIR. Minsk, BSUIR, 2021. – P. 82.