

OPINION

by Prof. Dr. Rumen Trifonov, Technical University of Sofia

of dissertation for awarding the educational and scientific degree "Doctor"
on "Information and communication technologies for smart homes"
in the field of higher education 5. Technical sciences
professional field 5.2. Electrical engineering, electronics and automation
doctoral program "Application of the principles and methods of cybernetics in various fields of
science"
with author mag. Eng. Rosen Simeonov Petrov
scientific supervisor: Prof. Dr. Dimitar Karastoyanov

1. Relevance of the problem

Intelligent solutions are applied in the so-called "smart" (intelligent) homes, the subject of the dissertation. Among the technologies used, the role of ICT is significant. The topic of the dissertation is actual. The PhD student demonstrates a lot of knowledge of the state of the problem and cites global approaches and solutions.

The aim of the dissertation is to study the progress and integration of new technologies in modern construction to reduce operating costs and improve the quality of life and to propose an innovative approach to creating a smart home.

There is a correspondence between the set goal and tasks, the chosen research methodology and the stated contributions.

2. General characteristics of the dissertation

The dissertation consists of 110 pages, structured in 4 chapters, conclusion, contributions, list of publications and bibliography. 70 literature sources were used.

The first chapter provides an overview, analysis and systematization of different types of information and communication systems for smart homes.

The second chapter examines problems and modern solutions for building smart homes.

The third chapter proposes innovative solutions for the improvement and integration of smart housing technologies.

In the fourth chapter a model of a single-family house with built-in intelligent control systems is created.

3. Characteristics and evaluation of the contributions in the dissertation

The research in the dissertation is focused on management in residential buildings as an element of building automation. Both interior and exterior solutions for building a modern smart home are taken into account. The PhD student has managed to analyze, summarize and integrate not only the modern information and communication technologies needed for building automation, but also the other subsystems that make up the smart home management system. There is a correspondence of the chosen research methodology with the set goal and tasks of the dissertation. I believe that the doctoral student has successfully coped with the goals and objectives of the dissertation and I evaluate the positive results as scientific and applied.

4. Publications of the dissertation on the topic of the dissertation

The dissertation is based on 6 scientific publications, one of which is in a journal and 5 are from conference proceedings. Two of the publications are abroad and have DOI. One of the publications is independent, and in the other three the PhD student is in first place. This gives me reason to conclude that they are all prepared by the PhD student.

5. Use of the obtained results

In the attached documents to the dissertation there is a Declaration from the company "Martmax" Ltd., with interest in the developed innovative model by the dissertation, which is a good certificate for the work done by the dissertation.

6. Critical remarks and recommendations

The dissertation contains syntactic, grammatical and technical errors, as well as numbering errors (figures, cited sources).

The inaccuracies do not diminish the contributions of the dissertation, but the author should be more precise in publishing his future results.

7. CONCLUSION

The dissertation meets the conditions of ZRASRB, PPZRASRB and the Regulations for the specific conditions in IICT-BAS. The dissertation contains scientific and applied results of an innovative nature, which I appreciate. The candidate demonstrates the ability for independent research. **I strongly recommend to the Honorable Scientific Jury the awarding of the educational and scientific degree "Doctor" to Mag. Eng. Rosen Simeonov Petrov in the field of higher education 5. Technical sciences, professional field 5.2. Electrical Engineering, Electronics and Automation, doctoral program "Application of the principles and methods of cybernetics in various fields of science."**

March 24, 2022

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