

IV МІЖНАРОДНА НАУКОВО-ПРАКТИЧНА КОНФЕРЕНЦІЯ
МОЛОДИХ УЧЕНИХ, АСПІРАНТІВ І СТУДЕНТІВ

АВТОМАТИЗАЦІЯ ТА КОМП'ЮТЕРНО-ІНТЕГРОВАНІ ТЕХНОЛОГІЇ-2017



Міністерство освіти і науки України
Національний технічний університет України
«Київський політехнічний інститут
імені Ігоря Сікорського»



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АКІТ – 2017

Київ, 19–20 квітня 2017 року

Матеріали конференції



METHODICAL FEATURES OF TEACHING MEDICAL INFORMATION SCIENCE AT MEDICAL SCHOOL WITH "DECISION-MAKING IN MEDICINE" CHAPTER AS AN EXAMPLE

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Traditional decision-making research shows that the doctors face a general problem – problem of the decision-making in different medical tasks (the doctor-patient relationship, accumulation of information about a patient, the diagnostics and choice of decision tactics) [1–3]. Obtaining the information and analyzing the arisen situations a doctor constantly refers to data stored in his memory. The information can play a significant role in decision making, and can provide an explanation for some discrepancies between the qualification and diagnostic "feeling" of a doctor and the peculiarities of the disease manifestation from a concrete patient. The characteristic feature of the doctor's memory is that the general quantity of the reproduced information is smaller than the quantity of the perceived information while in a technical storage device these quantities are equal. Besides, in distinction from technical devices in the human's memory in the process of fixation, storage and reproduction, the information loss always takes place. For example, when the doctors were asked about information about possible side effects prescribed medication only eleven of the sixteen doctors were able to answer [4].

What should the students endure out of the section "Decision-making in medicine"?

Step 1 – The definition of the problem.

Step 2 – The definition of the multitude of possible decisions.

Step 3 – Formation of the evaluation which allows comparing alternatives (evaluation task).

Step 4 - The choice of the best solution from the multitude of possible solutions (optimization task). To make a decision means to make a choice out of several alternatives.

If a task solution isn't known (the analogue is absent), then the problems of the definition of decision search method come forth which are based on strategies of complete enumeration, implicit enumeration and enumeration on heuristics basis. As a result either a new task is solved or the condition of the system functioning changes or the new information has appeared or the shutdown of a system or its elements has taken place.

How is this section structured? In the course Medical Information Sciences the section "Decision-making in medicine" cover such questions:

1. The basic notions of the decision-making process.
2. Solving the medical tasks in the interactive (on-line) mode.
3. The problems of the definition of decision.
4. The strategy of complete enumeration, the strategy of implicit enumeration, the strategy of enumeration on heuristics basis (heuristic search).

5. Classification of decision-making tasks
6. The basic notions of multicriteria tasks. The basic notions of “game theory”.
7. The choice the null hypotheses for the check of the significance of obtained results.
8. The notion of sensitivity and specificity of the medical test.
9. The imitation models by means of which the possible variants of a research are investigated of the decision-making process.

Let's dwell on the notion of reliability of medical test used to distinguish healthy people from sick people who can be characterized by means of such test characteristics as sensitivity and specificity. ROC analysis is a popular method for evaluating the accuracy of medical diagnostic systems, in other words, the indices of accuracy are not influenced by the decision criterion. The probability “not to recognize a patient” is very small [5].

This technique for teaching Medical Information Science at the Department of Medical and Biological Physics and Medical Information Science of Kharkiv National Medical University shifts the role in training with the teacher as a lecturer on the student as a person who independently receives knowledge.

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