Certification of workplaces using automated tools based on topic modeling technologies

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The paper considers the solution to the problem of semantic description of the requirements of the workplace of an innovative enterprise based on the analysis of the collection of documents characterizing it based on thematic modeling technologies necessary to increase the validity of the recruitment of the company.

The purpose of the work is to identify ways to improve the efficiency of recruiting highly qualified personnel in an innovative company by creating objective methods for describing the requirements of specific workplaces based on the analysis of collections of documents characterizing workplaces.

Despite the total transition to robotic industries declared by Industry 4.0 technologies, the innovative activity of highly qualified employees of enterprises based on their knowledge and experience remains the driving force of the innovative development of the economy [1]. In this regard, modern enterprises aimed at creating innovative products pay special attention to the issues of hiring employees capable of innovation.

At the same time, in the modern market conditions of innovative business, the relationship between the parties "employer—employee" should be related to the problem of assessing the intensity of staff work and the degree of their involvement in the direct creation of innovations. For an employer, it is necessary not only to maximize the use of the labor potential of all categories of personnel but also to recruit personnel who are most suitable in terms of qualifications to perform certain jobs. In this regard, in companies that are interested in their innovative development, there is an increased interest in creating methods for accounting and rationing the competencies of personnel and workplaces to maintain them at the required level of intensity. [2].

However, as the practice of work on the accounting of workplaces shows, it is quite difficult for an innovative enterprise to objectively determine and clearly describe a set of requirements for a candidate for a specific workplace [3], since in the conditions of a dynamically developing innovative enterprise. the development of new products is conducted in the context of multidisciplinary research in developing fields of science and technology, which leads to significant difficulties in forming requirements for an employee at a particular workplace.

A similar problem can be solved by the procedure of certification of workplaces of innovative enterprises, which is a formal procedure for describing interrelated elements characterizing the production functions performed at this workplace [4].

To date, enough methods of accounting, certification, and certification of workplaces in various industries and services have been developed [5], however, they are of little use to describe the workplaces of innovative enterprises due to the considerable number and variety of unique operations due to the innovative nature of the activity [6].

In this regard, the task of creating objective methods for describing the requirements of specific workplaces based on the analysis of collections of documents characterizing the workplaces of innovative enterprises is particularly relevant.

In this regard, the author of this study has proposed a method for conducting such work based on the analysis of collections of documents describing in the most detailed way the work conducted at a particular workplace, including project documentation, job descriptions, other regulators of production activities, as well as regulating multidirectional information communications of the workplace.

At the same time, it is proposed to use the methods of thematic modeling of texts to conduct such an analysis [7].

The key point of thematic modeling is the statement that the appearance of a particular word in a particular document is due to the need to describe in a particular document some specific semantic topic, of which the word in question is an integral part. To formalize the task, vector representations of words, topics, and documents are used.

The main advantage of using thematic modeling as the basis of the system of certification of workplaces of an innovative enterprise is that thematic models of texts lend themselves well to the interpretation of the result obtained since the user understands the reasons for the allocation of certain topics, as well as their internal structure [8].

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