# ABSTRACT

Explanatory note size – 148 pages, contains 26 illustrations, 35 tables, 4 applications, 30 references.

**Topicality.** Regression analysis is considered a powerful tool for identifying dependencies between the results of experiments, regardless of the field of their application. However, to date, there is no single universal method that effectively solves the problem of building a multivariate linear regression, including determining the influencing factors on the output variable. Recently, a modified method of group argument accounting (MMGAA) was proposed [9], which is aimed at solving this problem, but its experimental research, analysis of research results, and recommendations for use are insufficient. This work is dedicated to the further development and research of this method to clarify its possibilities and limitations.

**The aim of the study.** The main goal is to increase the efficiency of building a multivariate linear regression given by redundant description due to the creation of software for the statistical analysis of the effectiveness of the modified method of group argument accounting at different values of the modeling parameters.

The object of research: modified method for constructing multivariate linear regression specified by an redundant description.

The subject of research: software for the statistical analysis of a method for constructing multivariate linear regression specified by an redundant description.

To achieve this goal, the **following tasks** were formulated:

− critical analysis of the possibility of effective use of the modified method of group argument accounting;

− formulation of requirements for the methodology of statistical modeling of the effectiveness of the method;

− development of a methodology for statistical modeling of the effectiveness of the method;

− creation of a software product that provides the user with the opportunity to implement an individual scheme of statistical modeling of the effectiveness of the method;

illustration of the effectiveness of the developed web application on a specific example of the implementation of the proposed methodology.

**The scientific novelty** of the results of the master's dissertation is that, it proposed for the first time the program implementation of the original methodology of statistical modeling of the effectiveness of the modified method of group argument accounting for the construction of a multivariate linear regression given by redundant description.

**The practical value** of the obtained results is that the developed software in the form of a web application can be used to analyze the effectiveness of a modified method of group argument accounting for the construction of a multivariate linear regression given by redundant description using own data through a web interface or REST API.

**Relationship with working with scientific programs, plans, topics.** Work was performed at the Department of Informatics and Software Engineering of the National Technical University of Ukraine «Kyiv Polytechnic Institute. Igor Sikorsky».

**Approbation.** The scientific provisions of the dissertation were tested at the 5th International Scientific and Practical Conference of Young Scientists and Students "Software Engineering and Advanced Information Technologies SoftTech-2023" – Kyiv.

**Publications.** The scientific provisions of the dissertation were published in:

1) Pavlov O. A., Holovchenko M. M., Trotsiuk P. S., Drozd V.V. Software for the Statistical Analysis of the Effectiveness of the Multivariate Linear Regression Construction Method. Materials of the 5th International Scientific and Practical Conference of Young Scientists and Students "Software Engineering and Advanced Information Technologies SoftTech-2023" – Kyiv, December 19-21 2023.

**KEYWORDS:** MULTIVARIATE LINEAR REGRESSION, REDUNDANT DESCRIPTION, METHOD OF LEAST SQUARES, METHOD OF GROUP ARGUMENTS ACCOUNTING, SOFTWARE, WEB APPLICATION, REST API, MODELING