

## ABSTRACT

The topic: Predicting the results of expert assessment of foreign language skills using sums of random variables

The bachelor's thesis: 113 p., 20 fig., 11 tabl., 3 appendices and 26 sources.

Object of study: the process of assessment of the student's knowledge level by an expert panel.

The purpose of this thesis: development of the programming product to find the probabilities of the student getting each possible grade based on his personal parameters.

The method of observation: a proposed mathematical model based on the distribution of the sums of random variables.

In this thesis a mathematical model for the task of predicting the results of experts assessment of foreign language skills is proposed. The model takes into account the number of experts, their individual thresholds that determine the grades they give and student's individual parameters, i.e. average frequencies of mistakes of each type that he makes, to determine the probabilities of getting each possible grade for this particular student. The model is particularly useful for tasks where automated assessment is not widely spread, such as speaking or writing.

Another valuable result of the thesis is an overview and proposal of new approaches for the distribution of the weighted sum of Poisson random variables that appears in other applications, for example in medicine and insurance, but is not sufficiently studied. Other alternative distributions, which may be used in the model, are also studied.

Examples of formalization and solving of several related problems based on the results yielded by the model are presented.

A program was developed using the model. The results of this thesis are recommended for use in the education process to monitor and improve it.

EXPERT ASSESSMENT, CUMULATIVE DISTRIBUTION FUNCTION, WEIGHTED SUM OF POISSON RANDOM VARIABLES, COMPOUND POISSON DISTRIBUTION, POISSON BINOMIAL DISTRIBUTION.