MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
TERNOPIL IVAN PULUJ NATIONAL TECHNICAL UNIVERSITY
FACULTY OF FOREIGN STUDENT
Department of Computer Science

ADEYEYE NAFIU ISHOLA

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PROGRAM MODULE DEVELOPMENT AS COMPONET OF MATLAB MULTILAYER STRUCTURE.

8.05010101 "Information Control System and Technologies "

master’s degree

The thesis has carried out at the Computer Science Department in Ternopil Ivan Puluj National Technical University, Ministry of Education and Science of Ukraine

Supervisor: Ph.D., assistant professor of of cyber security
Zagorodna Nataliya,
Ternopil Ivan Puluj National Technical University,

Reviewer: Ph.D., assistant professor of design tools, instruments and machines
Kobelnyk Vladimir Romanovich,
Ternopil Ivan Puluj National Technical University

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GENERAL DESCRIPTION OF WORK

Actuality: Accurate prediction of different parameters is very important in our daily life starting with predication of the weather parameters and finishing with prediction of economical indices. The analysis of the existing solutions on predication methods showed that the best adaptability and prediction accuracy provides artificial neural networks.

The purpose of the work: To predict the final selling price of an apartment in co-operative housing society as a case study.

Object, methods and sources of research. The matlab mathematical software is very popular now within scientists and practioners because it has a lot of embedded functions, including Neural Network.

Scientific novelty of the results:

- The goals of this research is to develop a software module for one-step prediction with re-training and multi-step predication in matlab design and analysis service purpose facility production, the analysis of adaptability;
- explored ways of making similar parts;
- The matlab mathematical software is very popular now within scientists and practioners because it has a lot of embedded functions, including Neural Network;
- completed a feasibility study of the decisions;
- Analysis of the existing prediction methods and software systems, which can be used for predication station designed machine shop for manufacturing case.

The practical significance of the results.

This Information can be used not just for predict apartment in co-operative housing society but predication of different parameters predication of the weather parameters and finishing with prediction of economical indices. The analysis of the existing solutions on predication methods showed that the best adaptability and prediction accuracy provides artificial neural networks.

Approbation. The result have been reported at the V International scientific conference of young scientists and students <<Actual tasks of modern technologies>>, Ternoil, November 17-18, 206.

The structure of the work. The work consists of an explanatory notes and graphical part. Cash-explanatory note consists of an introduction, 5 parts, conclusions, list of references and appendixs. Scope of work: settlement and explanatory note - 102 pages. A4, graphic part - 7 sheets A1

MAIN CONTENTS

In the introduction, a review of the current state of the engineering industry and describes the main challenges that need to be addressed.

In the analytical part analysis of the issue according to the literature and other sources, the urgency of work done on the formulation of the problem thesis.

In the research part The research features of the method of genetic algorithms to optimize the layout of the production facilities.

In the technological part shows the characteristics of the object of production, analysis drawing details and specifications for production, analysis of technological parts, conclusions and formulated the basic tasks of designing, designed single technological process of manufacturing parts.

In the design of made the choice and design of technological equipment for making the set details

As a special part The research capabilities of the package COMSOL MULTIPHYSICS, the peculiarities of using computer-aided design technology to solve problems, using appropriate software designed alternative process.

As part of the project held designing manufacturing site for the implementation of the developed technological process implemented refine program production at the site, the calculation complexity and verstatomistkosti manufacturing products based on the developed processes, determine annual needs for technological equipment, preparation of summary information equipment, identification of quantitative structure of workers in the mechanical department, determination the size of the main and auxiliary space station shop and identifying key sizes and a choice of type and design of the building layout plan designed shop equipment layout, choice of load carried and vehicles.

As part of the "Substantiation of economic efficiency" The question of production and calculations conducted technical and economic efficiency of design solutions.

In terms of "Health and safety in emergency situations" considered planning work on a labor safety at the site of the projected legal foundations of security in emergencies, and scheme of the protective switch mechanism in the event of tension on cases of equipment or if accidentally touches the conductive parts .

As part of "Ecology" analyzes the current status of Ukraine, the issues of pollution arising from the implementation process and proposed measures to reduce environmental pollution.

Annexed to the explanatory note given information sheets, a set of technical documentation for HOST3.1404-86.

In the graphic part of the drawing shows the details of the designation of the coordinate axes and surfaces, drawing blanks, naladok technological schemes, assembly drawings of technological equipment and layout of equipment at the site mehobrobky.

CONCLUSIONS

In conclusion thus, two predication methods, the MULTI-STEP predication and ONE-STEP prediction with re-training were developed and experimentally tested in this research. The following results are obtained in this work. The existing predication methods and software systems, which can be used for predication, are analysed and the task for the work is set. The mathematic, algorithmic and information bases of software module which implements the MULTI-STEP predication and ONE-STEP predication with re-training in Matlab are developed. The multi-layer perceptron model used for the prediction is described theoretically, the developed module allows the further use of this Matlab based software for the experimental research of different prediction tasks on different time series with the better quality in comparison with a standard prediction method implemented in matlab. For example, the results of experimental research have showed, that the developed ONE-STEP prediction method with re-training provides a sustainable better prediction results in comparison with two others methods.

LIST OF PAPERS PUBLISHED BY THE AUTHOR OF THESIS

1. Adeyeye Nafiu Ishola, B.B Mlynko. Information technology of Photoplethysmographic Signals Analysis / Proc. of V International scientific conference of young scientists and students << Actual tasks of modern technologies>>, Ternopil November 17-18, 2016, vol.2 – Ternopil TNTU Press. – 5p.

SUMMARY

In the thesis work the accurate prediction of different parameters is very important in our daily life starting with predication of the weather parameters and finishing with prediction of economical indices. The analysis of the existing solutions on predication methods showed that the best adaptability and prediction accuracy provides artificial neural networks.

Keywords: Program module, development, matlab component, multilayer structure, prediction, parameters.