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TITLE OF DIPLOMA THESIS:

"Artificial Neural Networks Applications in Forecasting the Licensing Duration of Engineering Structures"

AUTHOR: Chatzichristakis Fotios

ABSTRACT

The knowledge of the licensing duration of an engineering structure depends on a series of characteristics and other factors that are accessible from the early stages of a project undertaking. The distribution of the resources and the profit of such an undertaking are directly based on the cost of this project. The cost is mostly influenced by the duration that is demanded by the consultant of the particular project.For this reason, the aim of the present dissertation is to examine the factors which determine the licensing duration of engineering structures, as well as to build a model that will forecast this duration with the use of a method from the artificial intelligence industry, the neural networks.Firstly, the reader is introduced to the meaning of engineering structure and its main characteristics. Moreover, the people involved and the general factors that influence the project, as well as the relationship between the duration, quality and cost are presented. Then follows a description of the artificial neural networks and the sectors in which they are used today. Their function and the different alternatives of their structure are also analyzed. The way in which the data is inserted in the training procedure of a neural network and how these are used in order to maximize their forecasting ability are presented. Then, the research methodology is being described, as well as the tools that were used. Furthermore, there is a description of the sample and the variables that were examined in correlation with the licensing duration. Finally, the training and application of the artificial neural network are realized, as well as the presentation of tests with different variable combinations, in order to find the ideal network.The conclusions that were extracted show that the selected model can estimate with an approximately high precision the duration that is required for the realization of a licensing study. The ability of the artificial neural networks to solve problems with great complexity, through the generalization of the data that is inserted, makes them one of the best methods that solve forecasting problems of the duration of a project implementation.

KEYWORDS