

ABSTRACT

Master's thesis consist of 80 pages, 47 illustrations and 24 tables.

During the development of this master's thesis a system was developed for the automatic classification of chest medical thermograms of the healthy and not healthy patients.

This topic is very relevant today as thermograms are widespread, so there is a need for programming techniques that will help doctors identify the disease even at an early stage and pay attention to possible symptoms for more detailed analysis.

The proposed system consists of software developed using the Python programming language with opensource libraries. Various mathematical data processing methods were used for processing, such as Singular value decompression for convert an image into a vector, and a Support vector machine for train the model and use it later to classify thermograms. Metrics were also calculated for correct validation and overall validation and adequacy of controls.

A startup project for the potential start of mass production was also developed, as well as the possibilities of entering the domestic and international markets.

As a result of the work, software with the metric F1 score 0.81 was developed, which is a very good result given the relatively small sample size and a script was developed to test new thermograms based on the trained SVM model.

Keywords: thermogram, python, machine learning, automation, classification, modeling, automation, optical system.