UNIVERSITATEA BABEŞ-BOLYAI CLUJ-NAPOCA

FACULTATEA DE MATEMATICĂ ŞI INFORMATICĂ

SPECIALIZAREA INFORMATICĂ ROMÂNĂ

LUCRARE DE LICENŢĂ

MammoDetect: Deep Learning Techniques for Breast Cancer Detection: A Comparative Study of GoogLeNet and EfficientDet in 3D Imaging

Conducător ştiinţific
prof. Dioşan Laura

Absolvent
Baciu Ioana

2024

ABSTRACT

The purpose of this thesis is to experiment and compare how a GoogLeNet architecture will perform in classifying breast images into normal or cancerous. Along with the classification problem, a second model representing an EfficientDet architecture focused on detecting the tumors in the aforementioned images and also classifying them into benign or malign. The best performing models from each problem have been selected and integrated into an intelligent system that aims to showcase the use of the two models in real life scenarios.

In order to get the best configuration for each architecture I conducted many experiments on each one and documented them in chapter 4. The detailed description of the architecture structure for both GoogLeNet and EfficientDet have been written in chapter 3. Other ways of solving breast cancer classification and detection are presented in chapter 2. Chapter 5 explains the evolution of the system and finally, chapter 6 encompass the conclusions of the thesis and how to improve the performance of the models resulted after the experiments.