8DC00 Medical Image Analysis

Project 2 - CAD

Report

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Group 3

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# 1. Introduction

CAD, short for computer aided diagnosis, has become a standard part of the detection of for example breast cancer at many screening sites and hospital. The CAD programs gives for example as output to which class the analyzed cells belong to, malignant or benign cells. CAD is developing even more and has become one of the major research areas of medical imaging. (Doi, 2007)  
The size of the cell nuclei of cancer cells in the breast can be a useful feature to give a prognosis of the aggressiveness of the tumor. The bigger the nuclei the worse the prognosis. Automating the measurement of the cell nuclei would spare a lot of time for the pathologists.  
The goal of this project is to create a program that automates the cell nuclei measurement and classify these cells to the large nuclei class or the small nuclei class. The automatic cell nuclei measurement will be done with the use of a linear regression model and evaluated with the outcoming error. The classification will be done with the use of a logistic regression model and evaluated with the outcoming accuracy. Multiple variations of parameters will be tried to find the best model. This is the model with the highest accuracy and lowest loss.   
Furthermore this report will end with a comparison of these linear- and logistic regression models to deep neural networks that are explained in the paper of Graham et al. (2019)

# 2. Methods

# 3. Results

# 4. Discussion

# References

Doi, K. (2007). Computer-aided diagnosis in medical imaging: Historical review, current status and future

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# Appendix