TSB-funded Project 'TADD'- Trainable vision-based anomaly detection and diagnosis Technical Report for August 2014

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Chapter 1

Introduction

This is the August 2014 report for the project TADD. The core topic of this report is software development for QA-TADD. I will be away on holidays from 15 to 31 August 2014, consequently this report covers research and development in QA-TADD for the first two weeks of August. The job description for this month is taken from the objectives of QA-TADD for Q7 which is implementing additional features to distinguish class types that are misclassified frequently.

Chapter 2

QA-TADD Development

In the last month (July 2014), we achieved the goal to enable QA-TADD work with high resolution images taken from DSLR camera. Since we get enough details from high resolution images to distinguish between similar blemish types it is time to focus on image feature extraction. The candidate features are Local Binary Patterns (LBP) [1] and Gabor filters [2, 3, 4].

We have implemented LBP and Gabor filte C++ codes. Examples are shown in Figures 2.1 to 2.3. Currently, this code extracs the features and saves the results in to the hard disk, but these codes will be integrated into TADD classifier when I come back in September. Also, we need to investigate parameters of each feature, e.g. number of neighbouriung pixels in LBP or wave length in Gabor as current code gives the freedom to end user to give some numeric values for each parameter. This can be done when we have the results of the confusion matrix of closely related blemish types.

Figure 2.1: Example of QA-TADD input.

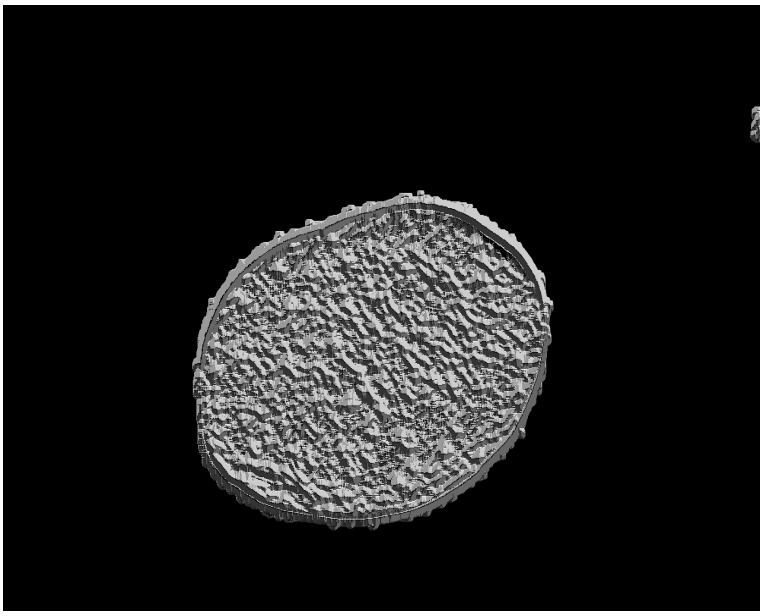

Figure 2.2: LBP map of the input to QA-TADD (shown in Figure 2.1).

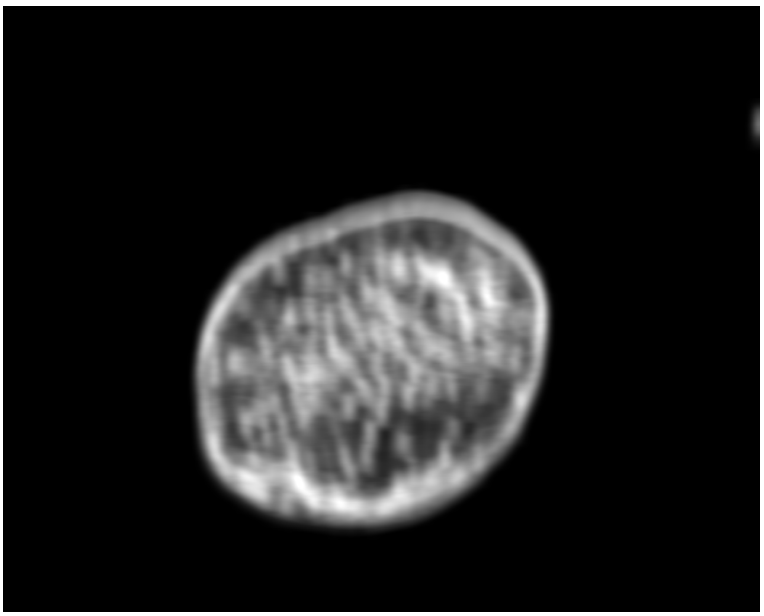

Figure 2.3: Gabor filtered image of the input to QA-TADD (shown in Figure 2.1).

Chapter 3

Conclusions

In this August 2014 report, we have written two feature extraction codes: LBP and Gabor filter. They have been added to image pre-processing part of QA-TADD. We may need first or higher order statistics of each of the extracted features before feeding them in to Adaboost algorithm.

Bibliography

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