

CHAPTER 9

CONCLUSION

9.1 Conclusion

In each pipeline system, corrosion is commonly observed as a defect. In order to maintain the integrity of pipe systems, the timely recognition of corrosion is important. A selfrecognizing method based on image processing and machine learning is proposed in this paper. Imaging methods such as statistical properties of the colored image by three texture descriptors, gray-level co-occurrence (GLCM) matrixes, grey-level running lengths (GLRL) are used to extract features. The machine learning method that is a support vector machine (SVM) classifies the image into two classes-corrosion and non-corrosion. The newly developed program can also be useful as a way to rapidly evaluate pipeline systems for industries such as the coal, oil and chemical and petrochemical industries.

9.2 Future Enhancement

Further extensions of the current study may include the utilization of other advanced machine learning for data classification, employment of other metaheuristic for model optimization, employment of higher-order statistical features as input to machine learning based classifiers, enhancement of the detection accuracy for image samples located in the boundary of the corroded area, improvement of the computational efficiency of the current method by employing advanced image segmentation techniques, and collection of more image samples to enhance the generalization of the current model.