

ABSTRACT

Steel is the most essential material in the world of engineering and construction. Modern steelmaking relies on computer vision technologies, like optical cameras, to monitor the production and manufacturing processes, which helps companies improve product quality.

Traditional object detection methods are based on handcrafted features, which have problems like needing an excellent precision rate, flexibility, etc. Hence, the technique used for this paper is segmentation methods in defect detection. It classifies the object and its defects and then is reviewed with categories of characteristics, strengths, and shortcomings.

The simulation and analysis results in this final thesis reveal that the model can produce good results, with an Intersection Over Union (IOU) of 0.96 in defect inspection on the steel surface.

Keywords: Defect inspection; deep learning; image processing; image segmentation