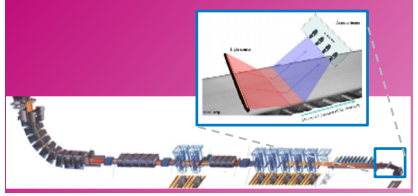
Data and Applied Sciences

Visual Quality Inspection of steel strip line

INTRODUCTION

Built an AI Powered Computer Vision based solution framework for hot rolled steel strips for a is a German multinational engineering company.

- 98% Higher Accuracy with Deep Learning Model
- 8% Reduction in Defect related Losses
- Data augmentation techniques employed in order to increase sample size for training



BACKGROUND

- Lack of defect detection in a hot rolled steel strips accuracy causing losses due to costly product replacements and product recalls
- Inability to scale up the solution with dynamic quality compliances and product specifications
- Size of surface defects ranging from 100 microns to 10mm
- The dataset included 1,800 grayscale images: 300 samples each of six different kinds of typical surface defects

SOLUTION OFFERED

- AI Powered Computer Vision (Visual Quality Inspection) based solution framework for quality inspection, with algorithms using deep learning technologies
- From the hot-rolled steel strip production line , images were collected for detecting surface defects.
- Deep Learning Model was created using Tensor Flow framework & Data augmentation techniques
- Multiple convolutional neural network (CNN) architectures evaluated and validated with data

BENEFITS/OUTCOMES

- 98% Higher Accuracy with Deep Learning Model
- 8% Reduction in Defect related Losses & Learn intelligently and accommodate the varying needs of defect detection over time
- High throughput rates as compared to human operations
- Reduced product warranty costs due to lower defective parts being shipped
- No high training & labor cost

Technology Stack

OpenCV

PyTorch

BOSCH