DEEP LEARNING HAKATHON

Detecting Defects in Manufacturing.
Develop a Deep Learning model that can detect defects in the manufacturing process based on images or video feeds from the production line

Replic8

AI&DS Madhyam Bharati 05
AI&DS param joshi 17
AI&DS Dipasha 07
AI&DS Aditya Mamgai 27

Agenda

- Introduction
- Overview of CNN model
- Detailed Explanation
- The Training Procedure
- Evaluating Result
- Conclusion

INTRODUCTION

Introduction of a CNN model that is designed to classify manufacturing products as either defective or not, along with the epoch, batch size, and dataset information: Our CNN model is a deep learning model that uses convolutional neural networks to analyze images of manufacturing products and classify them as either defective or not. The model is trained on a dataset consisting of thousands of labeled images of manufacturing products, where some are labeled as defective and others are labeled as not defective. The dataset is split into a training set, a validation set, and a testing set to ensure the model's accuracy and prevent overfitting.

Back to Agenda Page

OVERVIEW OF CNN MODEL

A Convolutional Neural Network (CNN) is a deep learning model that is commonly used for image classification tasks, such as identifying defective products in a manufacturing setting.

Model Architecture: Define the architecture of the CNN, which typically consists of a series of convolutional layers, followed by pooling layers and one or more fully connected layers. You can experiment with different architectures to find the best one for your manufacturing dataset

Back to Agenda Page

Detailed Explanation

Data Preparation: Collect a set of images of your manufacturing products, where some are labeled as defective and others are not. Split the dataset into training, validation, and testing sets.

Model Training: Train the CNN using the training set and validate it using the valida set. During training, you can adjust the learning rate, batch size, and other hyperparameters to improve the model's accuracy.

Model Evaluation: Evaluate the trained CNN using the testing set to see how well it generalizes to new data. You can use metrics like accuracy, precision, recall, and F1 score to evaluate the model's performance.

PARAMETERS OF MODEL

THE TRAINING PROCEDURE

- We collected, augmented, designed a CNN architecture, trained, evaluated, and test the model to classify manufacturing products as defective or not.

THE EVALUATING RESULT

- The approach involved standard steps in training a CNN model for classification. The model achieved a Maximum accuracy on the testing set, and was deployed in the manufacturing facility.

CONCLUSION

- **CNN model to classify manufacturing products as defective or not. The model was trained on a large dataset, designed with an optimal architecture, and evaluated to achieve high accuracy. The model was then deployed in our manufacturing facility to improve the efficiency and accuracy of our quality control process. Overall, the approach followed standard steps for training a CNN model and achieved a satisfactory result for our specific use case.**