Fault Findy

FaultFindy leverages Deep Learning to predict faulty tyres during the manufacturing process, enabling proactive optimization and reduced waste. raditional quality control methods often identify faulty tyres only after production, leading to waste and inefficiency. FaultFindy addresses this by predicting faults early in the process, allowing for corrective actions and improved production quality.

Data Sources

The dataset for this project comprises images categorized as 'Good , 'Defective'.

Dataset

This dataset digital images of tyres, divided into two categories: 1,028 defective and 828 in good condition. Each high-resolution image is meticulously labelled to indicate the tyre's state. This comprehensive collection is ideal for machine learning and computer vision applications, specifically in image classification and object detection. It provides a balanced mix of conditions, offering a robust resource for algorithm training and testing in identifying tyre conditions from digital images.

Data Preprocessing

Deep Learning Model: Analyzes various manufacturing parameters and process data to predict faulty tyres with high accuracy. Proactive Quality Control: Enables manufacturers to identify and address potential issues before they become actual defects, reducing waste and rework. Improved Production Efficiency: By optimizing processes based on predictions, manufacturers can achieve higher production efficiency and throughput. Scalability: Designed to handle large datasets and integrate seamlessly into existing manufacturing lines.

Usage:

Data Collection: Integrate FaultFindy with sensors and systems that capture manufacturing parameters and process data.

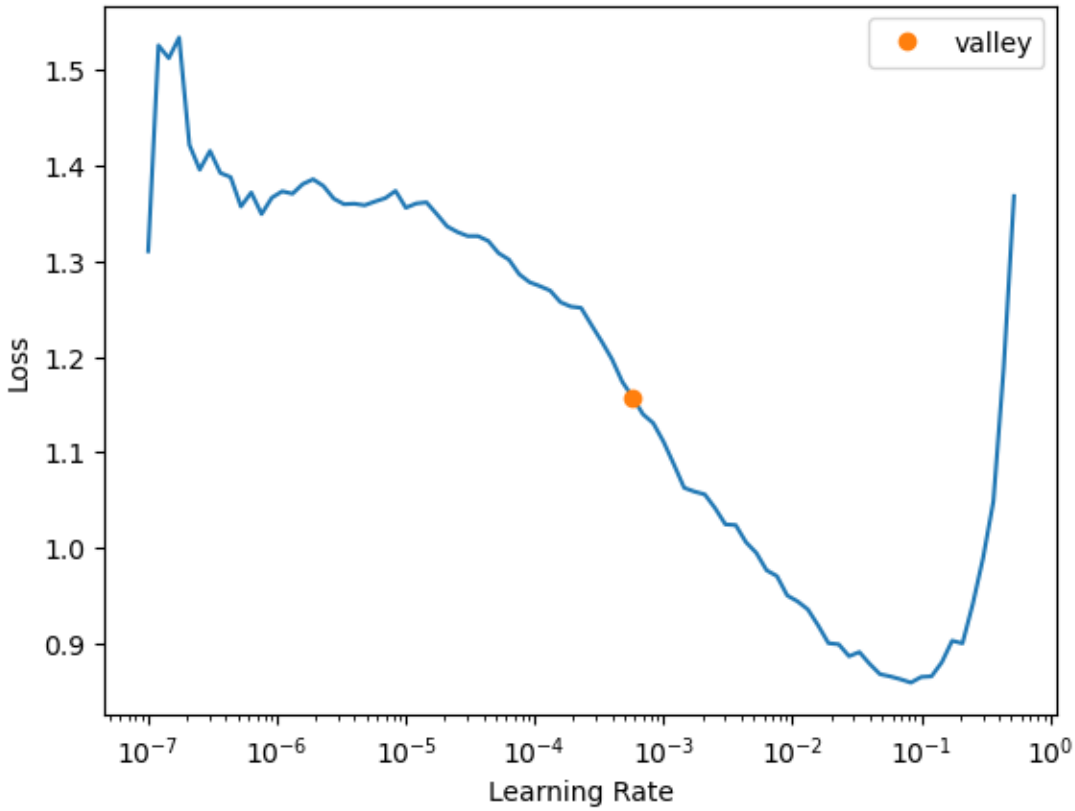
Model Training: Train the Deep Learning model on labelled historical data of faulty and non-faulty tyres.

Prediction: During production, the model analyzes real-time data and predicts the probability of a tyre being faulty.

Proactive Actions: Based on predictions, manufacturers can take corrective actions such as adjusting process parameters or flagging tyres for further inspection.

Number of training examples: 1485, Number of validation examples: 371


defective
defective
good
good
good
good


valley
1.5
1.4
1.3
1.2
1.1
1.0
0.9
Loss
10^{-7}
10^{-6}
10^{-5}
10^{-4}
10^{-3}
10^{-2}
10^{-1}
10^{0}
Learning Rate