



SRI RAMAKRISHNA ENGINEERING COLLEGE

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DEEP LEARNING BASED TYRE DEFECT DETECTION

Review - 1

Project Members

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Project Guide

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PROBLEM STATEMENT

Tyre defects can lead to accidents, vehicle damage, and road hazards. Detecting defects early is crucial for ensuring road safety and preventing accidents.

A



Defective image

B



Normal image

LITERATURE SURVEY

TITLE	AUTHOR	YEAR
Research on tyre crack detection using image deep learning model	Shin-Lin lin	2022
Tyre defect detection using Fully Convolutional Network	Ren Wang, Qiang Guo, Shanmei Lu and Caiming Zhang	2019

LITERATURE SURVEY

TITLE	AUTHOR	YEAR
Multi-Contrast CNN and Fast Feature Embedding for Multi-Class Tyre Defect Detection	Prajval Mohan, Ajinkya Pahinkar, Anushree Karajgi, Dinesh Kumar, Rashi Kasera, Abhinav Kumar Gupta, Swathi Jamjala Narayanan	2022
Tyre Defect Detection using Deep Learning Technique	Pathmanaban, Sunil, Jeyangel, Sangeet Sahaya, Chermadura	2023

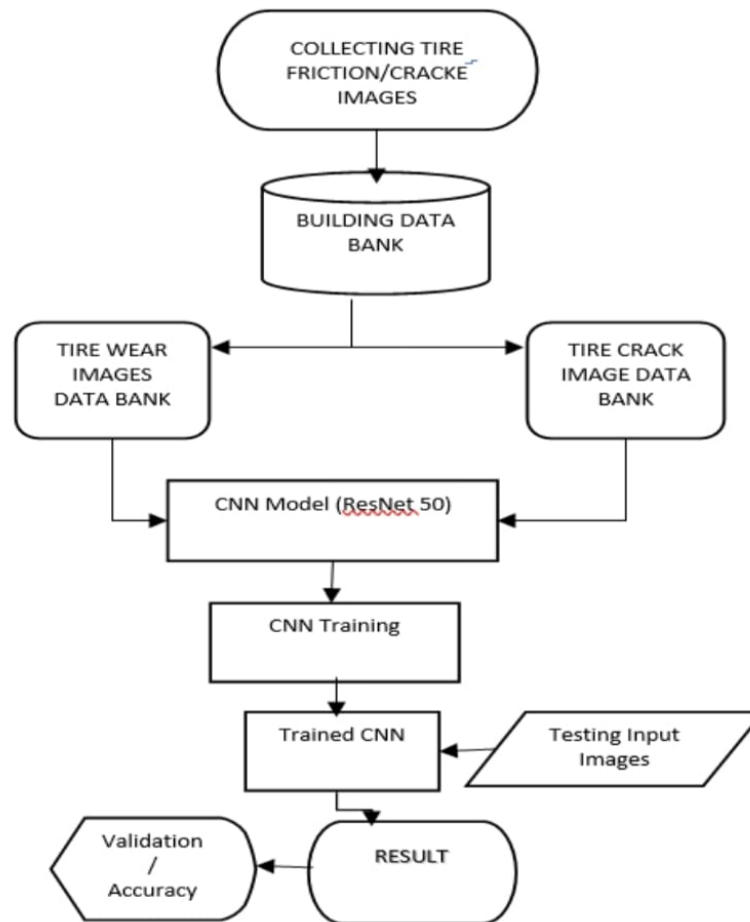
OBJECTIVES

- To ensure accurate detection of tyre defects.
- To classify the defected images using the residual structure based on convolutional neural network and compute the results with state of art CNN architectures.

PROPOSED WORK

- Proposed application of CNN for tire defect detection is to use it for automated visual inspection in the manufacturing process.
- By training a CNN on a dataset of images of both defective and non-defective tyres, the network can learn to identify patterns and anomalies associated with various tire defects, such as cracks, bulges, or tread wear.
- This can help improve the efficiency and accuracy of quality control in the tire manufacturing industry.

BLOCK DIAGRAM



MODULES

DATA COLLECTION:

The required dataset is acquired from
Kaggle

MODEL BUILDING:

The data is pre-processed and classified accordingly using appropriate Deep learning Algorithms

PERFORMANCE EVALUATION:

The performance of the model is analysed and evaluated.



TECHNOLOGY STACK

- Python
- Cloud storage (Firebase)
- Image processing
- Resnet -50

REFERENCES

- 1.S.M. Mynul Karim. et. al. "Tire Wear Detection for Accident Avoidance Employing Convolutional Neural Networks" in 2021, 8th NAFOSTED Conference on Information and Computer Science (NICS)
- 2.Harshal Bhanare. et., al. "Quality Inspection of Tire using Deep Learning based Computer Vision" in 2019, International Research Journal of Engineering and Technology(IRJET)

REFERENCE

3. Dr. A Albert Raj. et., al. "CNN based Tire ife Prediction and Defect Identification System" in 2021,6th International Conference on Communication and Electronics Systems (ICCES)
4. Orhan Bulan. et. al. "Tire Classification from Still Images and Video" in 2012,15th International IEEE Conference, 485-490.



THANK YOU