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PRODUCT FINGERPRINT

Tire Fingerprint

Tire Identification Using AI & Computer Vision

Abstract

The identification, tracking and tracing of tires from the point of manufacture to the point of sale is an important part of the tire supply chain and helps to combat counterfeiting, gray market sales and the unauthorized distribution of tires.

Tire tracking solutions available in the tire industry include RFID, tire labels and tire tread markings. However, each of these solutions are susceptible to tampering, counterfeiting and not able to uniquely identify a tire.

In this paper, we will introduce ***Tire Fingerprint*** – A low-cost solution that can be used in combination with exiting tracking and tracing solutions to improve the accuracy and real-time identification of tires throughout the tire supply chain, distributions and direct to vehicle manufacturers.

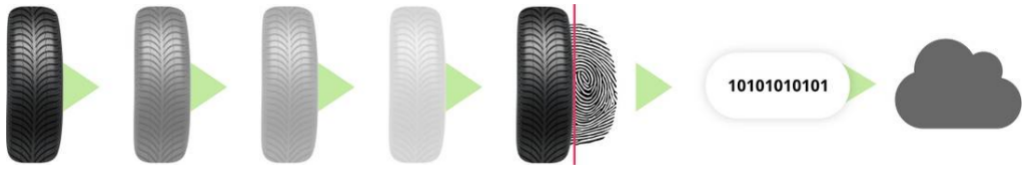
Introduction

Within the tire industry there are various methods used to track individual tires from the point of manufacture to the point of sale. However, these methods are all susceptible to tampering and none of these methods are able to (forensically) identify a tire uniquely.

Affixing labels to tires are one method to track tires, however this method is susceptible to label switching. The use of RFIDs is also popular method used in the tracking of tires; however, this method is also susceptible to RFID switching and is more costly than labels.

To date, there is yet to be developed an identification method that can be (forensically) used to identify a specific tire, until now.

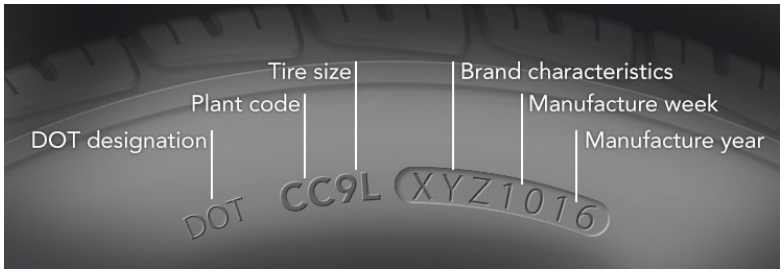
Tire Fingerprint is an innovative technology, made possible with the use of artificial intelligence and computer vision that allows for the unique identification a tire through visual inspection alone.



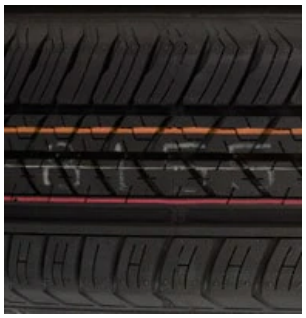
Tire Fingerprint Technology

Based on the forensic science commonly referred to as fingerprinting, Tire Fingerprint uses the combination of AI technology and computer vision to discern the unique features of a tire using visual inspection alone.

Our tire fingerprinting technology is able to use a combination of referential points, such as the ***tire tread***, ***tire tread markings*** (applied to the tire tread) and ***supplemental tire information*** (such as the placement and particulars of the DOT codes on the tire) to create a unique ***tire fingerprint***.



How it Works



The unique characteristics of each tire, although imperceptible by the naked eye are identified by the AI technology and assigned a unique fingerprint.

The initial scanning required is a 360 degree view of tire tread and can be occur during the manufacturing process, after tread processing.

Custom algorithms have been developed to specifically identify these unique characteristics in tires to allow for the creation of a tire fingerprint, a fingerprint unique to each tire.

Tire Identification

Once the tire fingerprint has been calculated (at the point of manufacture) a handheld mobile device (such as a smartphone with camera) can be used to take an image of the tire and the AI system will match the mobile image to the database of tire fingerprints already in the system.

Independent tire identification can take place at any place or point in time after manufacture by any 3rd party, such as service shops at the time of installation (the service shops would be able to independently verify tire specification and identity with a one-time scan of the tread). This process enables tires to be tracked for both new vehicle sales and within the replacement market.

Product Fingerprint

Tire Fingerprint technology has been brought to the market by **Product Fingerprint**, a software development company which has also developed fingerprinting technology for other industries such as the forestry and agricultural.

Cloud Based Architecture

This technology is built on the cloud and comes with a robust API to allow for close to real-time processing and analysis. Additionally, smartphones can be used (through the downloading of an app) to authenticate or validate a tire at any time throughout the supply-chain.

Conclusion

Tire Fingerprinting is a novel method to uniquely identify and track tires using computer vision and proprietary AI algorithms. We believe tire fingerprinting can be effective in helping to reduce and combat tire counterfeiting, gray market sales, the unauthorized distribution of tires and an important auditing tool.

TIRE FINGERPRINT

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