# Predictive Maintenance for Autonomous Vehicles

09.04.2023

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## Overview

Develop a predictive maintenance system for the brake system of an autonomous vehicle to reduce unplanned downtime and enhance safety.

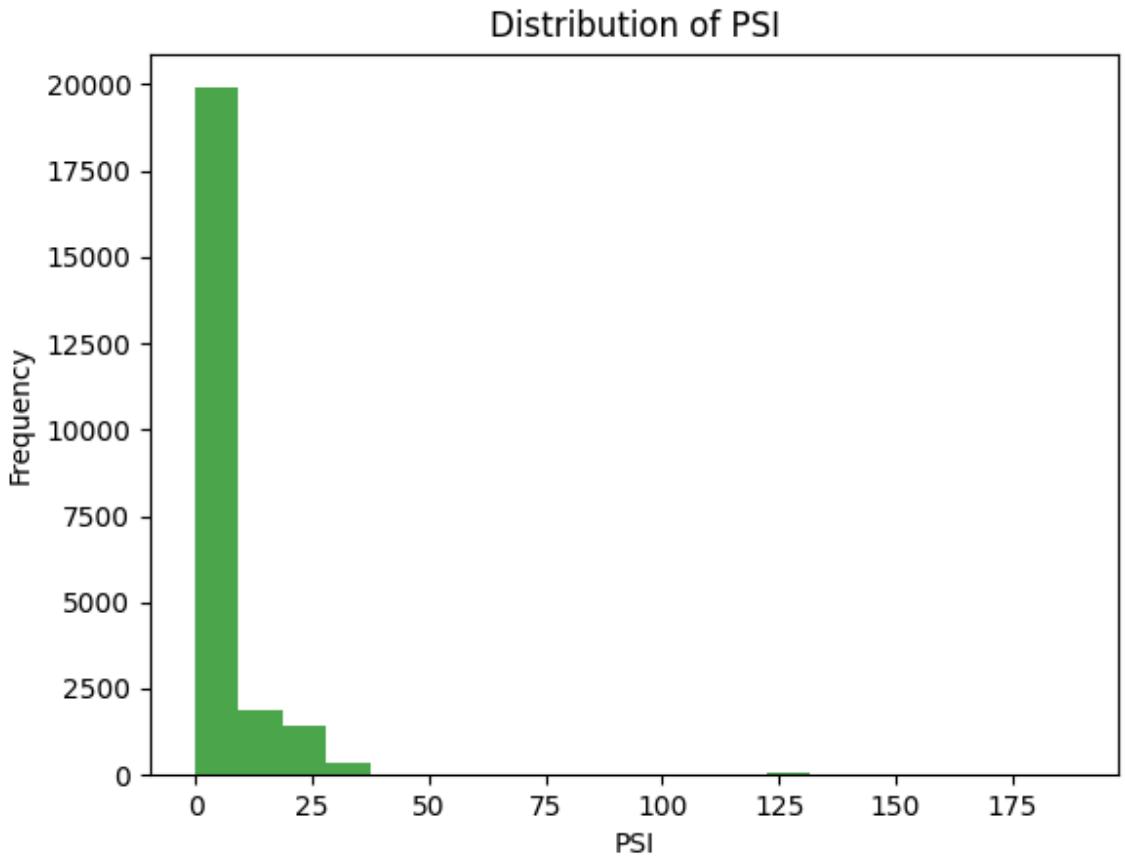
## Goals

1. Focus specifically on monitoring the health and performance of the brake system.
2. Sensors to consider may include brake pad wear sensors, brake fluid level sensors, and temperature sensors.

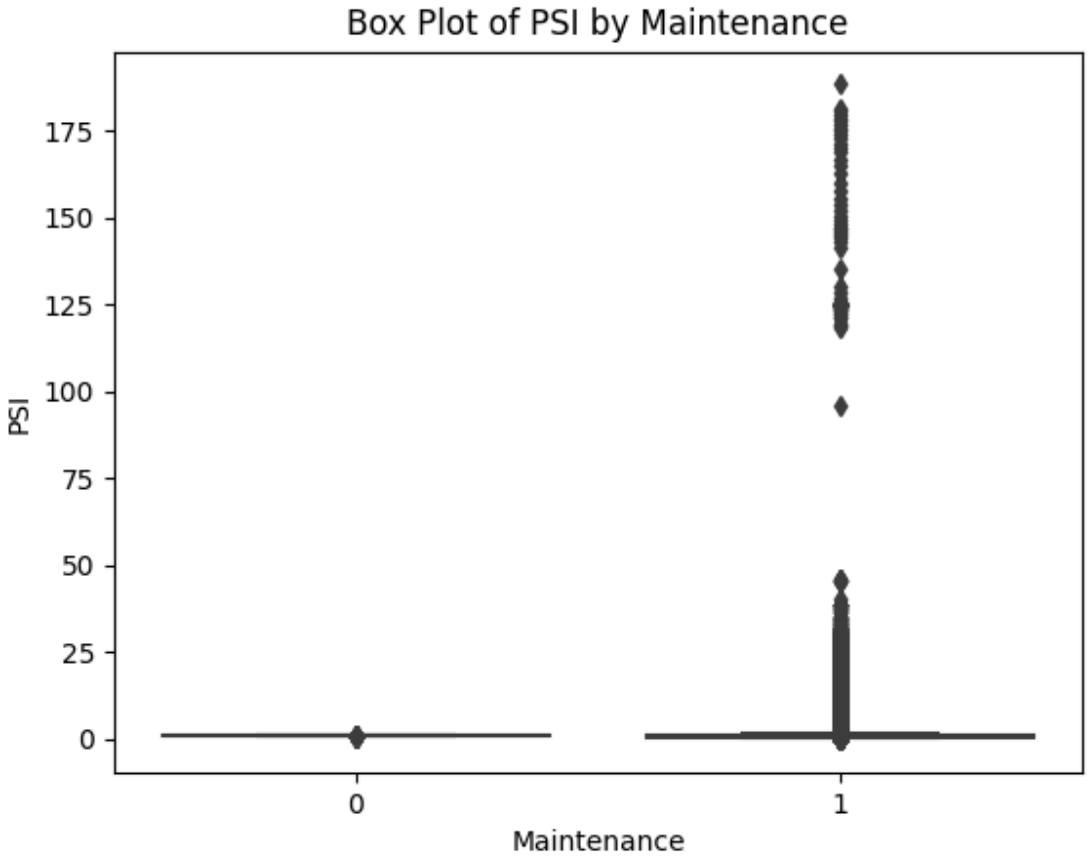
## Specifications

- Develop a brake system predictive maintenance system for autonomous vehicles, minimizing unplanned downtime.
- Monitor brake health using wear sensors, fluid level sensors, and temperature sensors and Pressure voltage.
- Track brake pad wear, fluid level, and system temperature as key performance indicators.
- Implement machine learning (e.g., Random Forest) for predicting brake system maintenance needs.
- Integrate real-time monitoring with existing vehicle systems, enhancing overall autonomous vehicle maintenance.

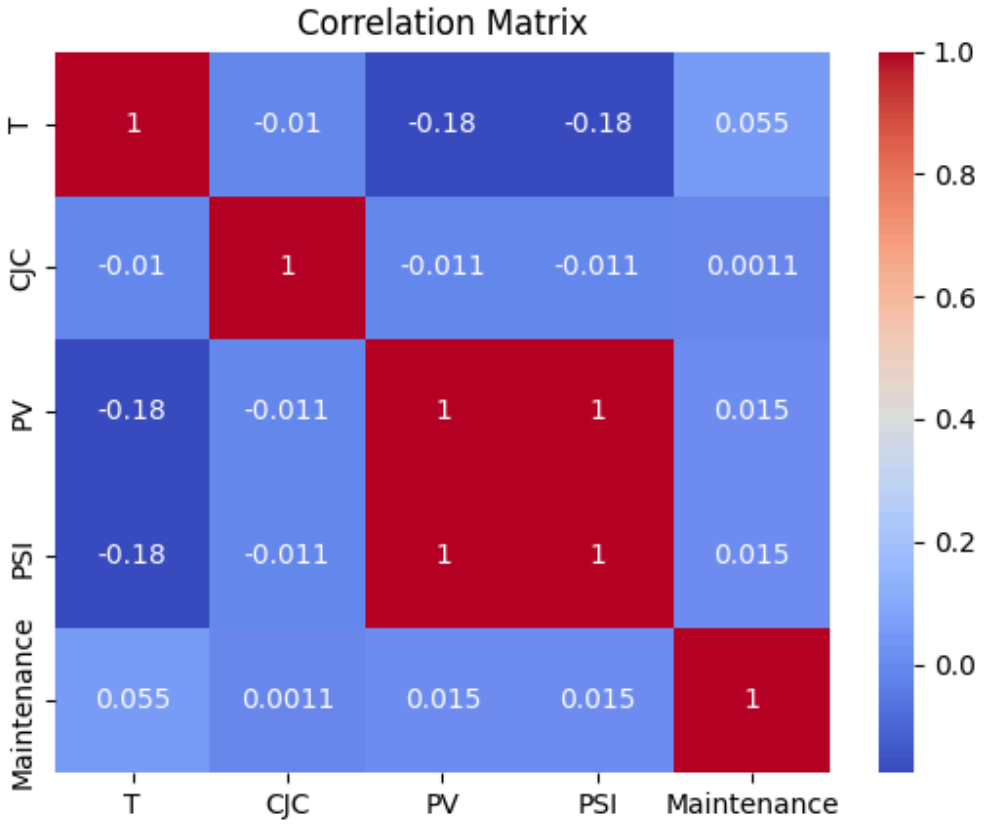
## Graphs and Figurines



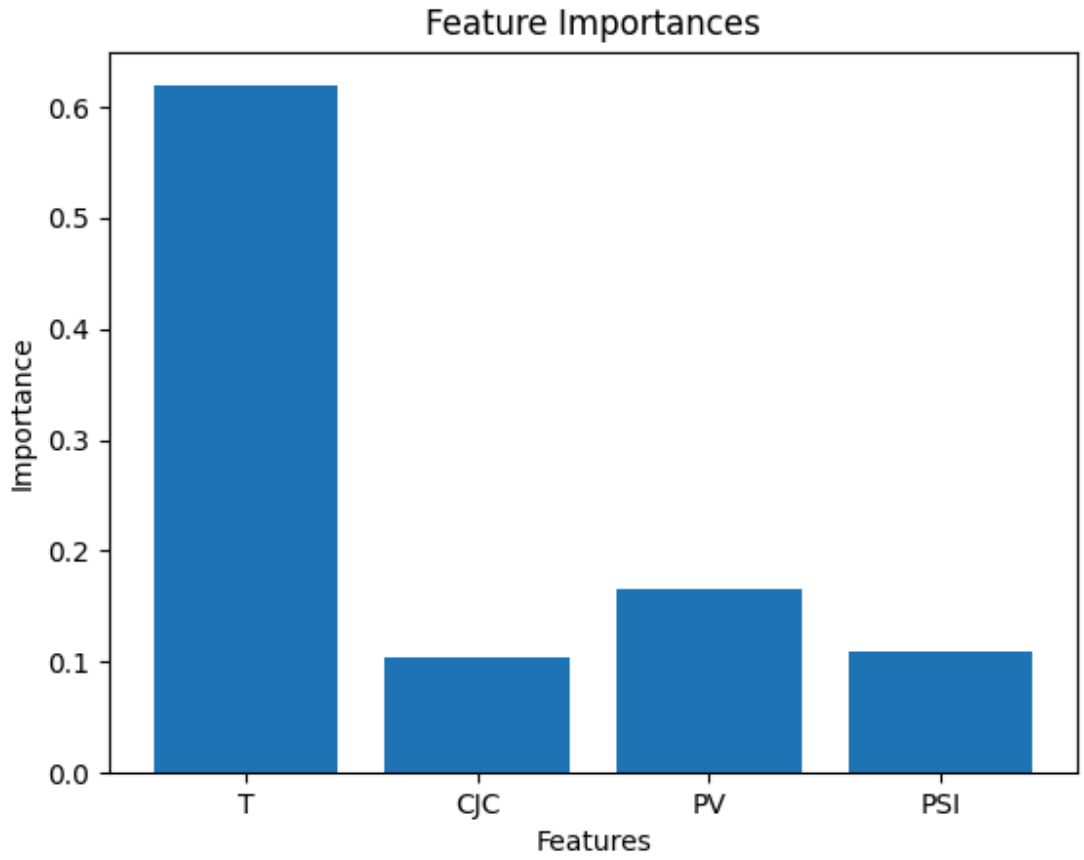

Shows the distribution of brake fluid pressure ('PSI'). Most values are within the normal range (0.6 to 1.2 PSI), with few outliers.



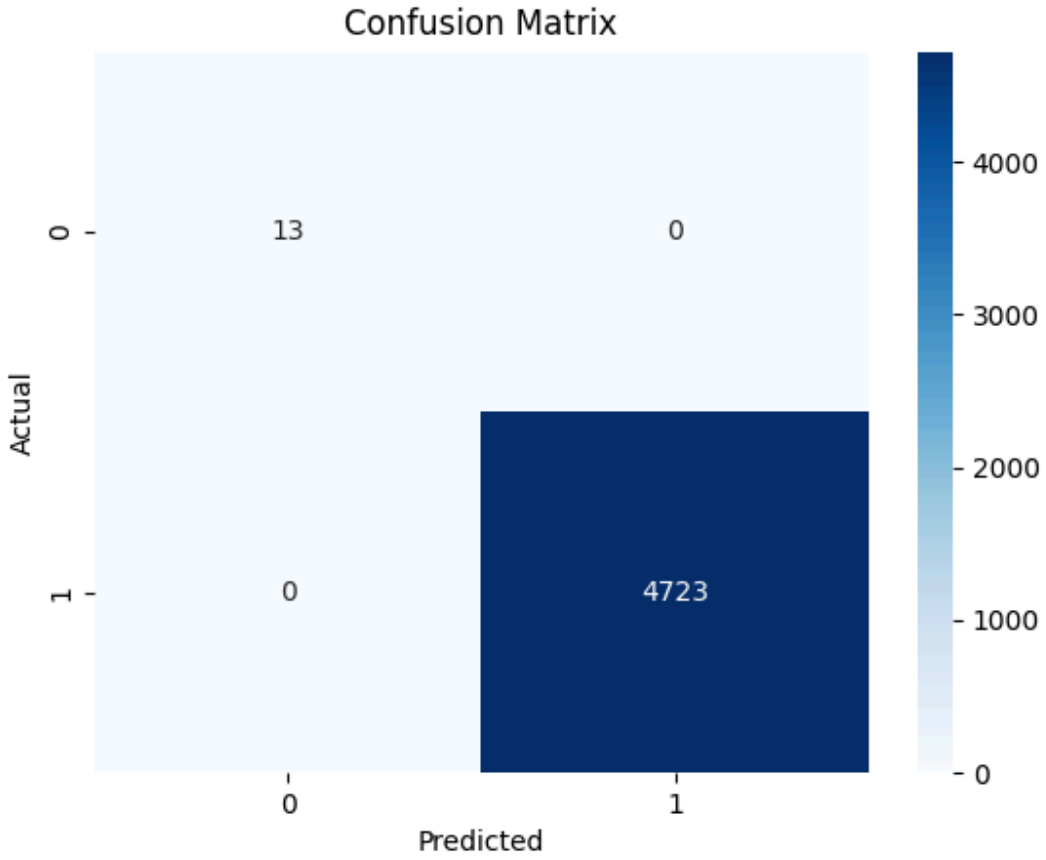

Illustrates that higher maintenance needs correlate with extreme 'PSI' values. Outliers suggest potential brake issues.




Reveals relationships between features. 'PSI' moderately correlates with other features; understanding these relationships aids model performance.




Indicates 'PSI' is a key factor for maintenance predictions, guiding attention in brake monitoring.




Evaluates model performance. High values on the diagonal indicate accurate predictions, providing insight into true positives and true negatives.