Warranty Correlation Analysis

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OVERVIEW / DEFINITIONS

- Minimize future warranty claims by better understanding what might cause a tested and sold transmission to fail
- Reject Code: error code indicating that a transmission was not accepted
- Trouble Code: diagnostic code that tells us what was/is wrong with a transmission
- Pallets: platform for transporting transmissions

GOAL

- Create an application that helps clean, organize, and analyze transmission data so that failure causes can be better detected

DELIVERABLES

- A web application that can process csv files to produce excel files and print visual graphs

PROJECT WORKFLOW

Divide and conquer approach: (1) counting trouble codes, (2) analysis of pallet data, and (3) recording retest history

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Integrate Python programs, created with Streamlit, into a web application for quality managers at the company to use with limited technical knowledge

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Improve our results based on mentor recommendations, altering output and adding optional requirements, such as sorting by date filter

DATA ANALYSIS

- **Input Datasets:** Warranty/Claims Data and Test Stand data
- **Performed data cleaning:** Merging data sets and removing duplicate and null values
- **Analysis:** Identified and visualized key correlations within the data, between columns such as trouble and reject codes and pallets
- **Goal:** Identify early predictors for transmission warranties, such as identifying certain reject codes can be directly linked to transmissions returning with specific trouble codes

AUTOMATED MODEL

Created a model to perform above data analysis and return three main outputs.

- Correlation between reject and trouble codes
- Pallets of interest
- Breakdown of warranty risk for retests

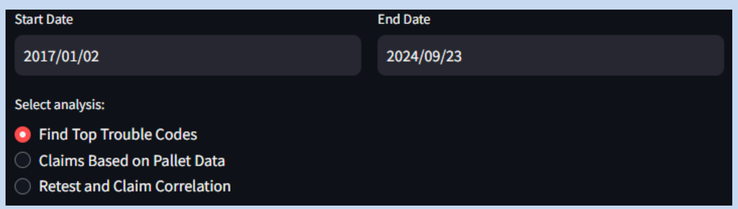

Figure 1: Analysis options provided by the automated model and alter the scope of the data based on provided dates

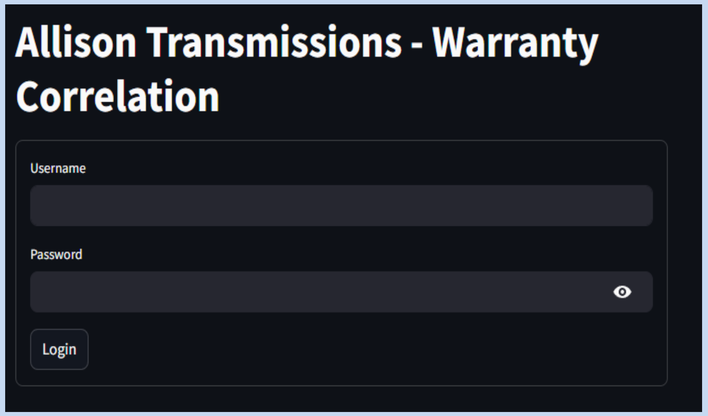

Figure 2: Snapshot of web application deliverable made for Allison Transmission. Application prompts user login, then shows drop-down menu where admins can use different analysis/correlation techniques we designed.

CONCLUSION

Through analysis of two large data sets, our team identified outstanding trends, particularly with trouble codes and pallets, to implement methods the company can use to predict future claims

FUTURE GOALS

Implement the admin interface for the web application, so admin can track user activity and view past analysis

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