

## What Drives the Price of the car?

### Machine Learning for predicting used vehicle price and predictors of price

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With the process of industrialization and urbanization, transport industry has seen tremendous growth in the last century than ever before. With increasing number of automobiles, used-car trading business has also seen proportional growth. However, predicting the price of used vehicle is not a simple task. It is a trite knowledge that the price of the used vehicle depends on a number of parameters including but not limited to age, miles driven, condition, type of the vehicle, manufacturer, it's fuel type and drive. The look and feel, previous owners, title history are also important factors that determine the price of the used vehicle. With so many factors in play, car dealers are dependent on their experiential knowledge and make a decision to buy a vehicle and sell it a price based on very few factors.

### **Machine Learning for Used-vehicle price prediction**

Machine learning can, however, help car-dealers/dealerships to make informed decisions based to data and numerical metrics regarding the price of the used-vehicle and what attributes of a used-vehicle. This can help the car-dealership to fine tune their inventory, rethink purchase price with data-driven models and estimate the selling price beforehand. Such a business plan can then increase the profitability of the trade for the dealer.

### **Bayesian Machine Learning model**

In the current proposal we have developed a Bayesian machine learning model (based on a dataset that contains about 14 features, many kinds of vehicles from 1930 onwards) to predict the price of used vehicle with ~75% accuracy. Bayesian models are based on probability, meaning, it provides a certain range of values within which the predicted value can be. With this flexible approach the dealership can even determine

1. If a prospective vehicle fits this model or is an odd observation (outlier).
2. Make predictions of the price based on the features of the car.

### **Business Recommendation and highlights**

The model developed from our analysis suggests that odometer reading, year, transmission, type (sedan, truck, bus etc.), fuel (gas, hybrid, electric etc.) and condition (new, fair, excellent etc.) are important determinants of a used vehicle price. With this recommendation and price prediction capability, the used car dealerships can improve their inventory to increase the churn rate and profit.

### **Future work**

Future work with this model and dataset can also help a dealership to develop an antique, classic, vintage car inventory and successful trading.