

# HOW MUCH DOES A SECOND-HAND CAR COST?

PROJECT 2 @METIS  
BY AUSTE MASTAVICIUTE

# READY FOR A CAR UPGRADE??

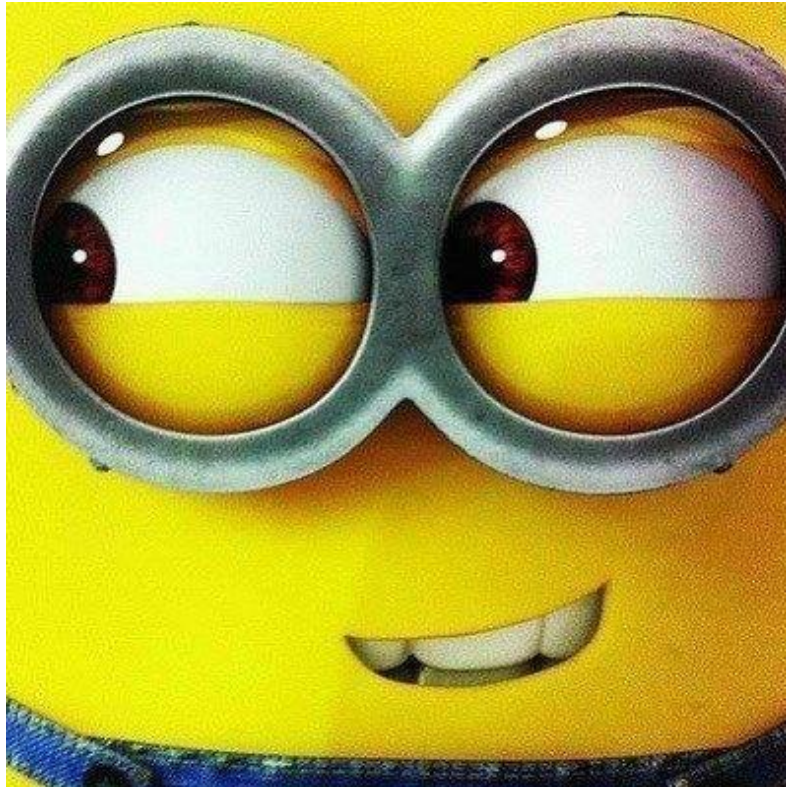


# BUT FIRST, HOW MUCH IS THIS ONE WORTH?





CAN WE GET AWAY WITH A LINEAR REGRESSION?



# WEB SCRAPING

Techniques used:

- Selenium

The screenshot displays the homepage of autoplus.lt, a Lithuanian car marketplace. The interface includes a top navigation bar with the site logo, user account links (Marked ads, My searches, Log in), and a 'Post an ad' button. Below this is a secondary bar with 'No.1 LEADER BENEFITS', 'CLASSIFIED ADS', 'NEW CARS', and language selection (LT, RU, EN, LV). The main content area features a 'QUICK SEARCH' form on the left, a '+POST AN AD' button, and a 'MY SEARCHES' section on the right. The search form contains fields for CATEGORY (Cars), MAKE, MODEL, YEAR FROM, YEAR TO, PRICE FROM, PRICE TO, FUEL TYPE, and AD NOT OLDER THAN. It also includes a 'TEXT SEARCH' field and a 'Search' button. The 'MY SEARCHES' section shows a saved search for 'BMW 330' with a notification toggle. A large red rectangle is drawn over the bottom right portion of the page, covering the lower part of the search results area.

# WEB SCRAPING

Techniques used:

- Selenium
- BeautifulSoup

autoplus.lt

Marked ads My searches Log in + Post an ad

No.1 LEADER BENEFITS CLASSIFIED ADS NEW CARS LT RU EN LV

Classifieds » Cars » Volkswagen » Golf

Like 0 Share Mark

Volkswagen Golf, 1.6 l., wagon

Gauk paskolą automobiliui išigyti Luminor SUŽINOK

Price in Lithuania 8 850 €

Autolizingas Sužinokite įmoką »

Export price 7 650 €

Date of manufacture 2014-05

Mileage 180 000 km

Engine 1598 cm³, 104 HP (77kW)

Fuel type Diesel

Body type Wagon

Number of doors 4/5

Driven wheels Front wheel drive (FWD)

Gearbox Automatic

+16 Photos

WHAT DO WE KNOW?

Make

Fuel Type

Model

Gearbox

Year Made In

Wheel Size

Mileage

Engine Size

Body Type

Colour

# DATA ANALYSIS TECHNIQUES

- Outlier Elimination
- Common Sense Factor





# DATA ANALYSIS TECHNIQUES

- Outlier Elimination
- Common Sense Factor
- Apply Subject Matter Expertise (SME)



FRENCH



V



GERMAN

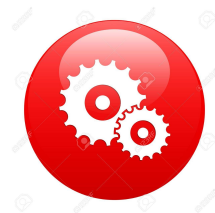
# THE MODEL & TRANSFORMATIONS

Linear Regression model

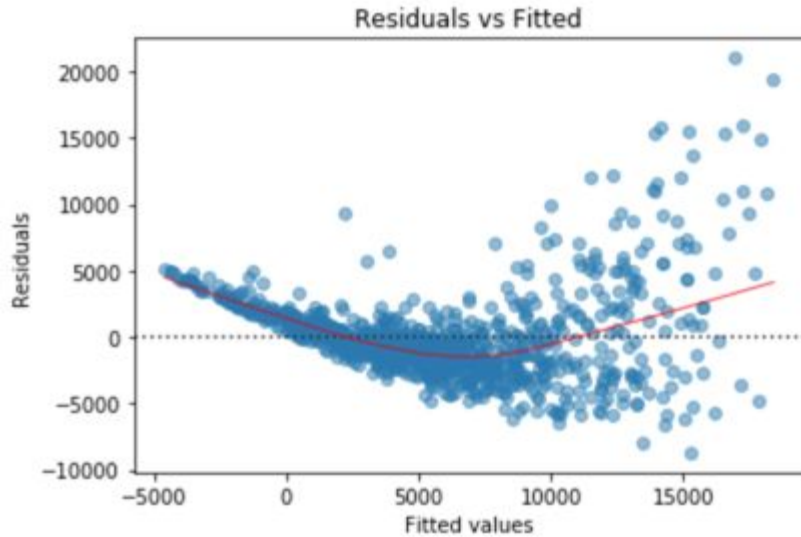


## Transformations:

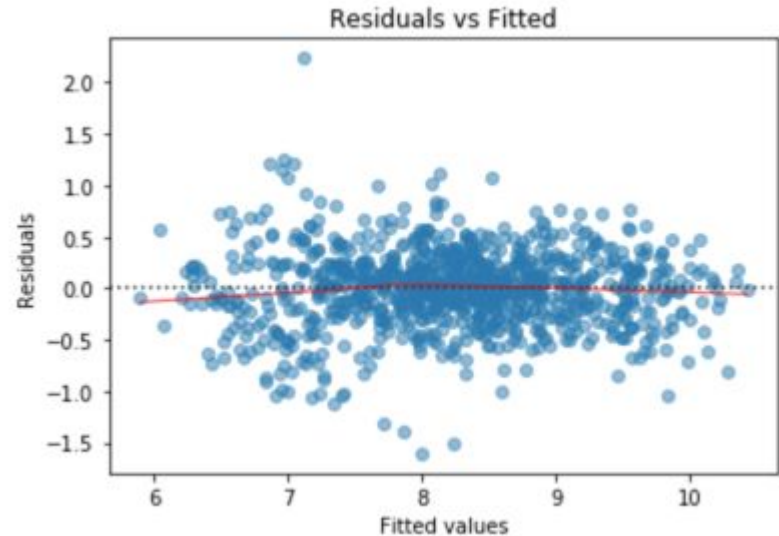
- Dummify Categorical Variables
- Log of Price



# THE MODEL & TRANSFORMATIONS



Log of Price effect



# RESULTS

- Most important features:
  - Year of Manufacture
  - Gearbox
  - Mileage
  - Engine Size
  - Make Country
  - Colour
- **67%** of Variance Explained
- Price Estimate Accuracy at **62%**


OH WAIT...


- Mean Price = €5,700
- Median Price = €3,900


• Error = €2,480




# A/B TEST 1



 Marked ads

 <sup>+2</sup> My searches

 Log in

[+ Post an ad](#)


**No.1** LEADER BENEFITS


CLASSIFIED ADS


NEW CARS

LT RU EN LV

[Classifieds](#) » [Cars](#) » [Audi](#) » [A4](#)

 Like 0

 Share

 Mark



**+5**  
Photos

### Audi A4, 2.0 l., wagon

Gauk paskola  
automobiliui įsigyti

**Luminor**  
SUŽINOK

Price in Lithuania	<b>6 500 €</b>
	 Sužinokite įmoką »
Export price	<b>6 500 €</b>
Date of manufacture	<b>2009-01</b>
Mileage	<b>280 000 km</b>
Engine	<b>1968 cm³</b>
Fuel type	<b>Diesel</b>
Body type	<b>Wagon</b>
Number of doors	<b>4/5</b>
Driven wheels	<b>Front wheel drive (FWD)</b>
Gearbox	<b>Manual</b>

€6,854

# A/B TEST 2



 Marked ads

 <sup>+2</sup> My searches

 Log in

 Post an ad

**No.1** LEADER BENEFITS

CLASSIFIED ADS

NEW CARS

LT RU EN LV

[Classifieds](#) » [Cars](#) » [Volvo](#) » [S80](#)

 Like 0  Share  Mark







**+16**  
Photos

### Volvo S80, 2.0 I., saloon / sedan

Gauk paskolą automobiliui įsigyti

**Luminor**  
SUŽINOK

Price in Lithuania	<b>6 250 €</b>  Sužinokite įmoką »
Date of manufacture	<b>2008-09</b>
Mileage	<b>218 000 km</b>
Engine	<b>2000 cm<sup>3</sup>, 135 HP (100kW)</b>
Fuel type	<b>Diesel</b>
Body type	<b>Saloon / sedan</b>
Number of doors	<b>4/5</b>
Driven wheels	<b>Front wheel drive (FWD)</b>
Gearbox	<b>Manual</b>
Climate control	<b>Climate control</b>

€4,935

# WHAT'S NEXT?

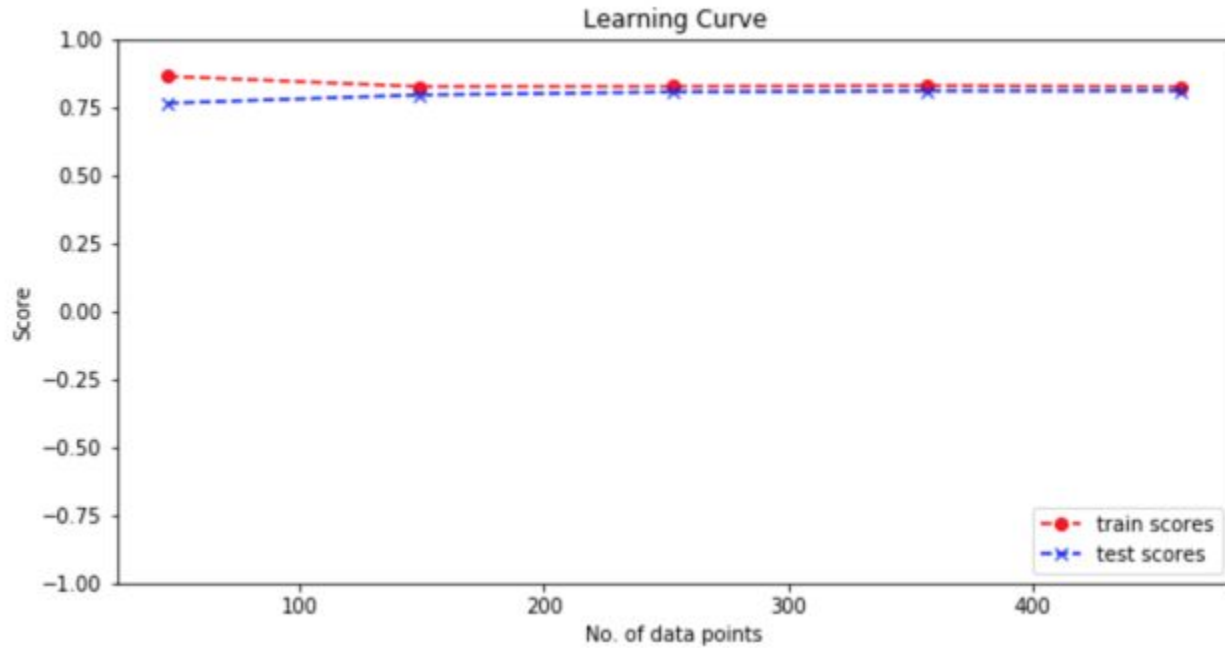
- Random Forest Model
- Gradient Boosting Model

ALL IS NOT  
LOST

THANK YOU

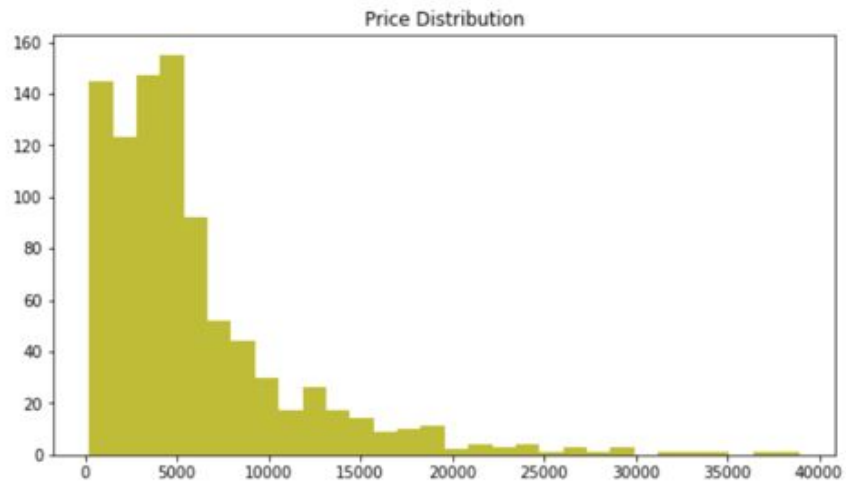
FOR YOUR ATTENTION!

# APPENDIX 1





# BEFORE



# AFTER

