

Automated Vehicle Valuation System

Gys Pitzer Motors

INTRODUCTION

South Africa has a vibrant market for used cars, evidenced by the presence of online platforms like AutoTrader with over 75,000 cars listed for sale across the country. Online platforms like AutoTrader centralize the selling of used cars, enabling consumers to easily purchase vehicles from various locations within South Africa.

Dealerships, such as Gys Pitzer Motoring, can benefit from analysing the current used car market on platforms like AutoTrader to understand competitor behaviour and make informed decisions, thereby improving their sales, profit margin, and gaining a competitive advantage.

DATA EXPLORATION

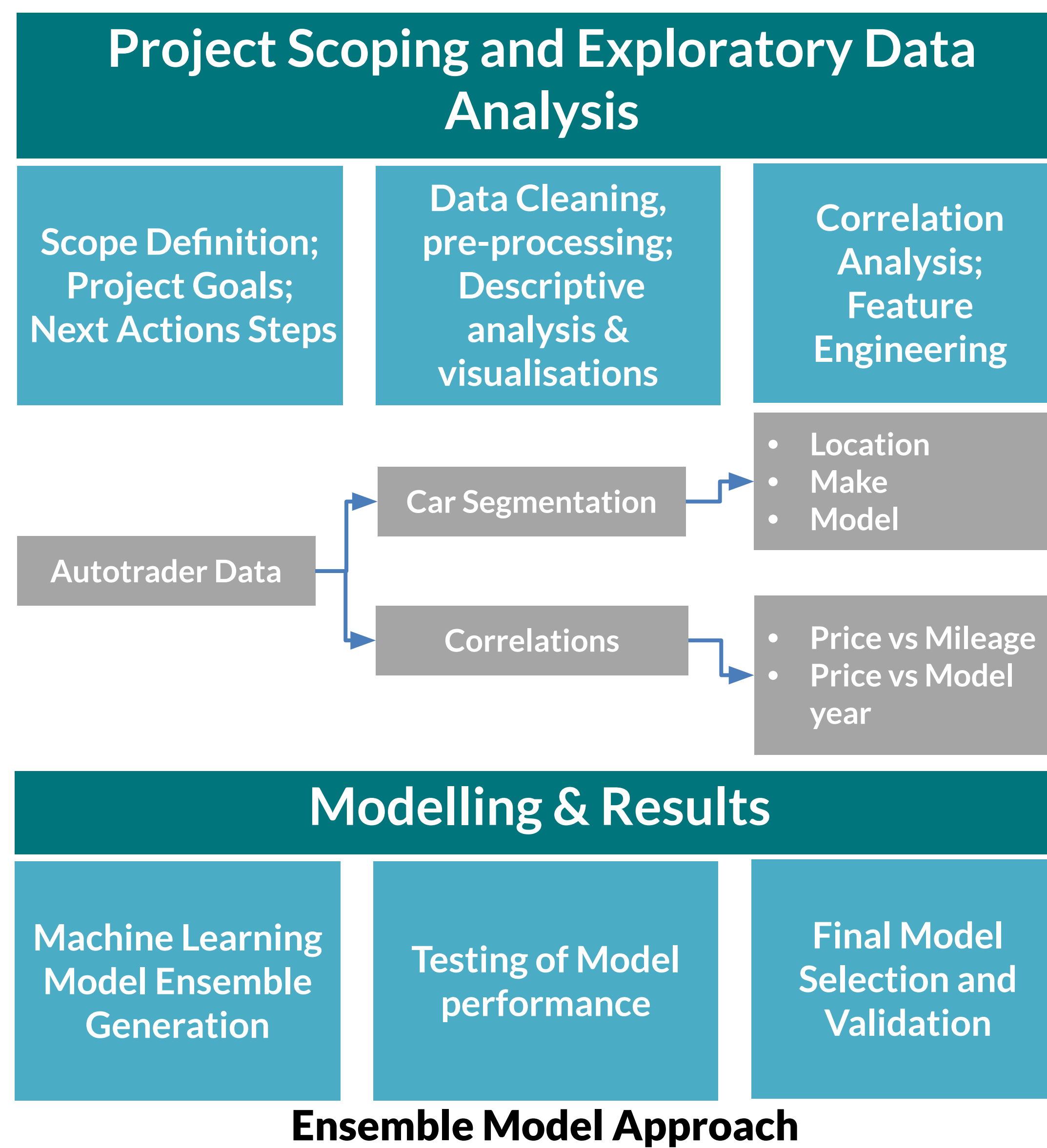
Data was extracted from the AutoTrader platform during the month of March 2023. The vehicle data gathered was based on used cars across all provinces in South Africa.

There are 719 unique dealerships in the Gauteng region, of which 3 belong to the Gys Pitzer Motors group – Gys Pitzer Motors, Gys Pitzer Motors Silverlakes and Gys Pitzer Motors Lindo Park.

OBJECTIVES

The goal is to develop a vehicle valuation prediction model that achieves several objectives. These include generating fair proposals to sellers by minimizing market value, maximizing profit per sale based on market value, maximizing the number of vehicles within scope while minimizing the time taken to reach an offer, minimizing turnaround time for validation and verification reports, maximizing the quality of vehicle information, and minimizing deals with questionable reputation from suppliers.

METHODOLOGY

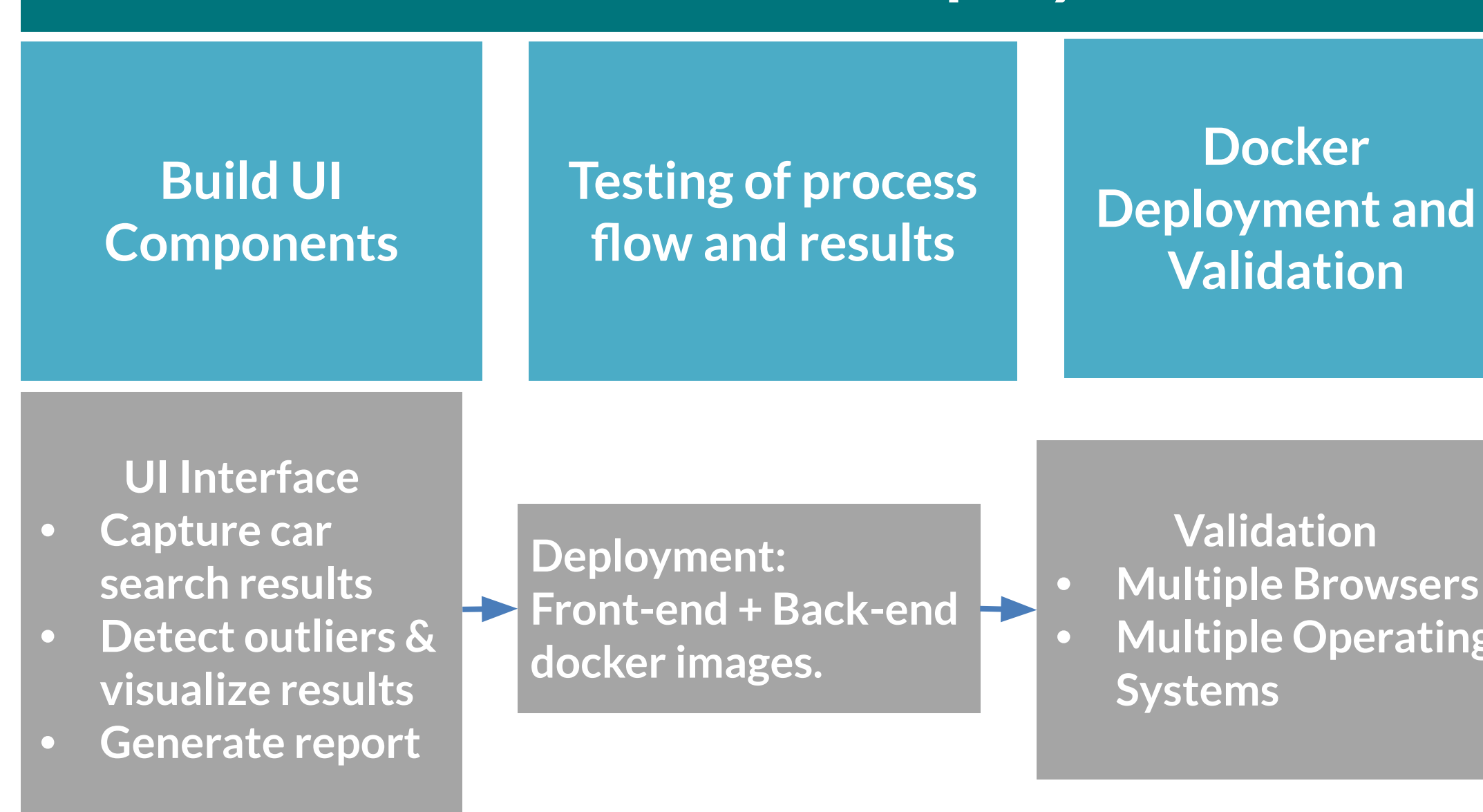


A decision tree model was trained on all available data and a specific linear regression model trained on returned query results, employing a weighting scheme that takes the distance of the target mileage and its approximation to the distribution of a specified car query results from the data searched.

Decision Tree Model Results

Metric	Result
RMSE	63414
R squared	0.8956
Cross Validation score(5 folds)	[-0.055 0.3415 -0.1754 0.2410 -1.1530]

Visualisation and Deployment



VISUALISATIONS

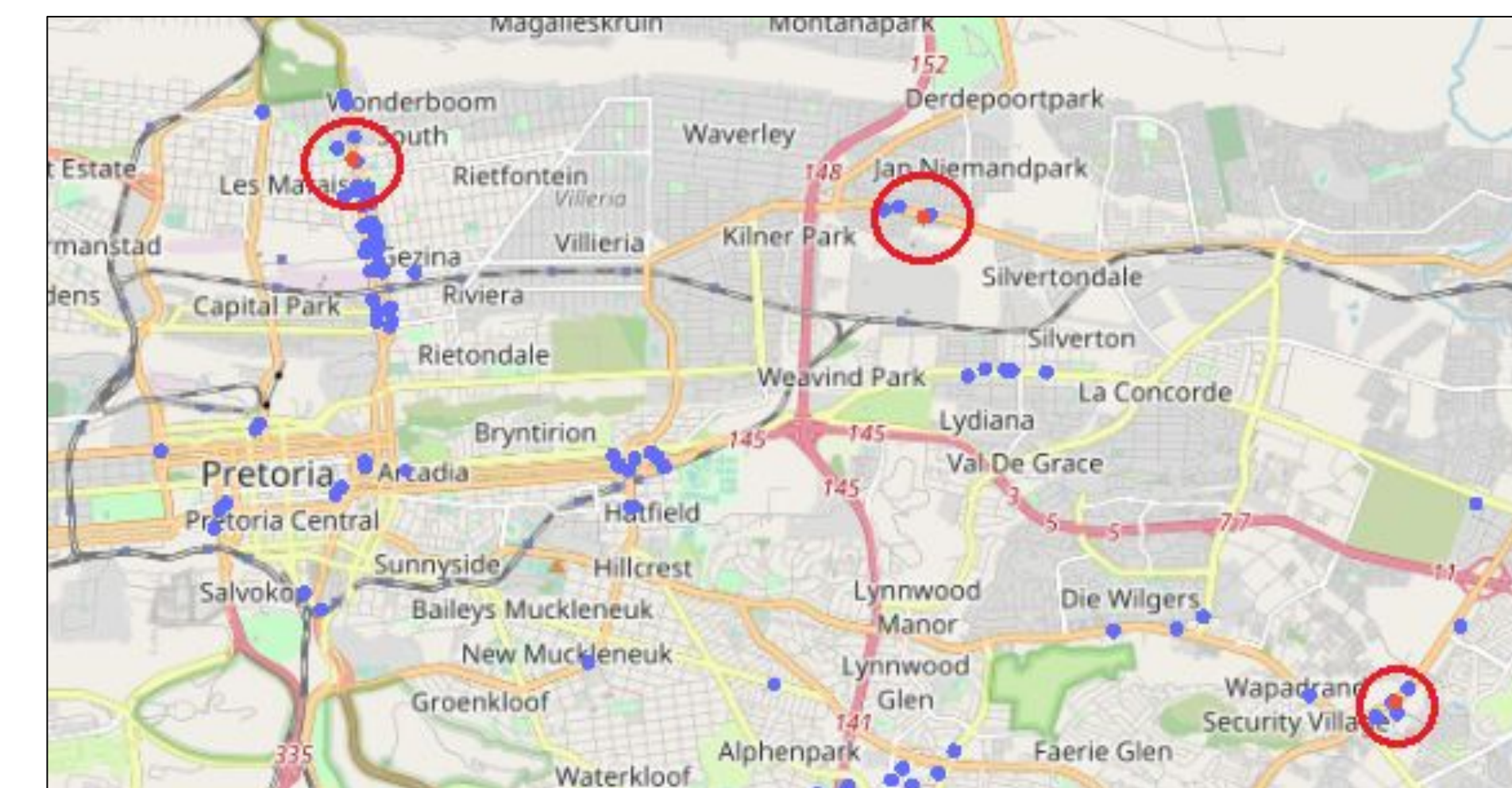


Fig.1 Gys Pitzer Motor's vs other dealerships in Pretoria region

Front-end UI

Fig.2: Vehicle Search Form

Fig.3: Vehicle Search Results

Fig.4: Visualization and confirmation

Fig.5: Report

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