

# Second-Hand Car Valuation Software User Manual

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## **GitHub Link:**

<https://github.com/RecepSamiOzdemir/software-engineering-project/tree/main/Second%20Hand%20Car%20Validation>

## Table of Contents

1	Introduction.....	3
2	System Requirements .....	3
3	Installation Guide .....	3
4	User Interface Overview .....	3
5	Features and Functionalities.....	5
6	Usage Instructions .....	5
7	Troubleshooting and Maintenance .....	5
8	References.....	5

# 1 Introduction

- **Brief Overview:** This software allows users to collect, analyze, and manage data for second-hand car valuations by scraping websites like Arabam.com.
- **Objectives and Goals:** Provide a tool to fetch real-time car data, apply filters, and analyze trends through graphs.
- **Scope:** Focuses on data collection, cleaning, visualization, and saving for car pricing trends.

# 2 System Requirements

- **Software Requirements**
  - Python 3.8+
  - Libraries: requests, bs4, pandas, lru\_cache. You can download the libraries as shown below:

```
pip install requests beautifulsoup4 pandas
```

# 3 Installation Guide

- **Prerequisites:** Ensure Python and required libraries are installed Configuration settings if necessary
- **Download:** Visit the GitHub Repository and download the project.
- **Setup:** Place interface.py, main.py, and data.csv in the same folder. Update configuration in main.py if needed.

# 4 User Interface Overview

- **Main Screens:**
  - **Filters:** Search by brand, model, price range, and more.
  - **Buttons:**
    - **Fetch Data:** Start data scraping.
    - **Filter:** Refine displayed data.
    - **Clear Filters:** Reset selections.
    - **Show Valuation Trend Graph:** View pricing trends.
  - **Data Table:** Displays fetched and filtered data. Let's look at Figure 1:

Car Data Viewer

Brand: \_\_\_\_\_ Model: \_\_\_\_\_

Min Price: \_\_\_\_\_ Max Price: \_\_\_\_\_

Min Year: \_\_\_\_\_ Max Year: \_\_\_\_\_

Min Kilometer: \_\_\_\_\_ Max Kilometer: \_\_\_\_\_

District: \_\_\_\_\_ Color: \_\_\_\_\_

Province: \_\_\_\_\_ Damage Report: All

Filter Clear Filters Show Valuation Trend Graph Fetch Data

	Brand	Sherry	Model	Price	Year	Kilometer	Color	Province	District	amage Informatic
1	Renault	Clio	1.6 RTE	309000.0	2000	190075.0	Gri	Izmir	Menemen	Badly damaged
2	Skoda	Octavia	1.6 TDI Elegance	517500.0	2011	225000.0	Bordo	Hatay	Antakya	Badly damaged
3	Volkwagen	Polo	1.6 TDI Trendline	510000.0	2011	169490.0	Gri	Istanbul	Esenyurt	Badly damaged
4	Ford	Focus	1.6 Comfort	325000.0	2003	359000.0	Bordo	Hatay	Iskenderun	Badly damaged
5	Renault	Megane	1.5 dCi Privilege	335000.0	2006	304000.0	Kirmizi	Gaziantep	Şahinbey	Badly damaged
6	Honda	City	1.4 Comfort	415000.0	2009	105000.0	Gri	Konya	Selçuklu	Badly damaged
7	Fiat	Bravo	1.6 MJet Easy	450000.0	2012	247500.0	Gri	Istanbul	Kadikoy	Badly damaged
8	Dacia	Lodgy	1.5 dCi Stepway	635000.0	2016	79000.0	Füme	Izmir	Bayraklı	Badly damaged
9	Chevrolet	Lacetti	1.4 SE	339000.0	2008	198000.0	Beyaz	Ankara	Keçiören	Badly damaged
10	Citroen	C3	Picasso 1.6 e-H...	428000.0	2013	156000.0	Beyaz	Kilis	Merkez	Badly damaged
11	Mercedes	-	Benz C 200 D ...	1400000.0	2015	170000.0	Beyaz	Diyarbakir	Yenişehir	Badly damaged
12	Fiat	Egea	1.4 Fire Urban ...	650000.0	2020	32000.0	Bordo	Gaziantep	Şahinbey	Badly damaged
13	Fiat	Egea	1.3 MultiJet Easy	690000.0	2023	28500.0	Kirmizi	Nigde	Merkez	Badly damaged
14	Renault	Symbol	1.5 dCi Joy	375000.0	2016	256000.0	Mavi	Istanbul	Bahçelievler	Badly damaged
15	Citroen	C5	1.6 e-HDi ...	515750.0	2012	235000.0	Beyaz	Adana	Seyhan	Badly damaged
16	Opel	Astra	1.3 CDTi Essentia	500000.0	2012	183000.0	Füme	Antalya	Kepez	Badly damaged
17	Audi	A4	Sedan 2.0 TDI	795000.0	2014	269000.0	Beyaz	Gaziantep	Şehitkamil	Badly damaged
18	Audi	A6	Sedan 2.0 TDI	625000.0	2007	420000.0	Beyaz	Konya	Karatay	Badly damaged
19	Audi	A6	Sedan 2.0 TDI	570000.0	2008	333000.0	Mavi	Şanlıurfa	Halliyi	Badly damaged
20	BMW	3	Control 3.0i, Coup...	700000.0	2008	333000.0	Gri	Istanbul	Eminönü	Badly damaged

• Figure 1: The general appearance of the interface and data table

- Let's filter the black Audis in Izmir that came out after 2018. Let's look at Figure 2:

Car Data Viewer

Brand: **audi** Model: \_\_\_\_\_

Min Price: \_\_\_\_\_ Max Price: \_\_\_\_\_

Min Year: **2018** Max Year: \_\_\_\_\_

Min Kilometer: \_\_\_\_\_ Max Kilometer: \_\_\_\_\_

District: \_\_\_\_\_ Color: **siyah**

Province: **izmir** Damage Report: All

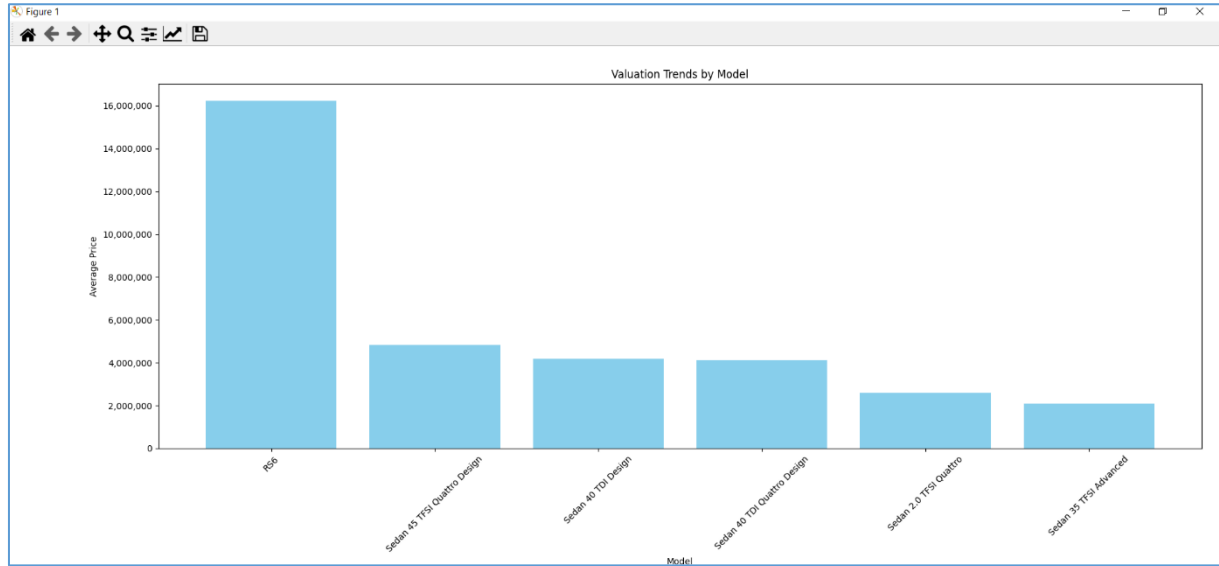
Filter Clear Filters Show Valuation Trend Graph Fetch Data

	Brand	Sherry	Model	Price	Year	Kilometer	Color	Province	District	amage Informatic
1	Audi	A6	Sedan 40 TDI ...	4170000.0	2022	41250.0	Siyah	Izmir	Gazimir	Unpainted-...
2	Audi	R5	R56	20200000.0	2023	6460.0	Siyah	Izmir	Gazimir	Unpainted-...
3	Audi	A6	Sedan 40 TDI ...	3975900.0	2023	96138.0	Siyah	Izmir	Gazimir	Unpainted-...
4	Audi	R5	R56	20200000.0	2023	6460.0	Siyah	Izmir	Gazimir	Unpainted
5	Audi	A6	Sedan 40 TDI ...	3975900.0	2023	96138.0	Siyah	Izmir	Gazimir	Unpainted
6	Audi	A6	Sedan 40 TDI ...	4170000.0	2022	41250.0	Siyah	Izmir	Gazimir	Without Tramer
7	Audi	A6	Sedan 40 TDI ...	4325000.0	2023	58000.0	Siyah	Izmir	Gazimir	Without Tramer
8	Audi	R5	R56	20200000.0	2023	6460.0	Siyah	Izmir	Gazimir	Unchanging
9	Audi	A6	Sedan 40 TDI ...	3975900.0	2023	96138.0	Siyah	Izmir	Gazimir	Unchanging
10	Audi	A6	Sedan 45 TFSI ...	4825000.0	2023	6100.0	Siyah	Izmir	Gazimir	Unpainted-...
11	Audi	A3	Sedan 35 TFSI ...	2095000.0	2023	31680.0	Siyah	Izmir	Gazimir	Unpainted-...
12	Audi	A6	Sedan 45 TFSI ...	4825000.0	2023	6100.0	Siyah	Izmir	Gazimir	Unpainted
13	Audi	A3	Sedan 35 TFSI ...	2095000.0	2023	31680.0	Siyah	Izmir	Gazimir	Unpainted
14	Audi	A6	Sedan 40 TDI ...	4350000.0	2023	58000.0	Siyah	Izmir	Gazimir	Without Tramer
15	Audi	A6	Sedan 45 TFSI ...	4825000.0	2023	6100.0	Siyah	Izmir	Gazimir	Unchanging
16	Audi	A3	Sedan 35 TFSI ...	2095000.0	2023	31680.0	Siyah	Izmir	Gazimir	Unchanging
17	Audi	R5	R56	12250000.0	2021	56000.0	Siyah	Izmir	Buca	Unpainted-...
18	Audi	A6	Sedan 2.0 TFSI ...	2600000.0	2018	115000.0	Siyah	Izmir	Bornova	Unpainted-...
19	Audi	A6	Sedan 2.0 TFSI ...	2600000.0	2018	115000.0	Siyah	Izmir	Bornova	Unpainted

• Figure 2 : Filtered data of black Audis in Izmir that came out after 2018.

- Looking at the data in filter 2, let's show the valuation trend graph in figure 3:

Car Data Viewer										
Brand:			Model:							
Min Price:			Max Price:							
Min Year:			Max Year:							
Min Kilometer:			Max Kilometer:							
District:			Color:							
Province:			Damage Report:			All				
Filter			Clear Filters			Show Valuation Trend Graph			Fetch Data	
	Brand	Sherry	Model	Price	Year	Kilometer	Color	Province	District	Average Informatic
1	Renault	Clio	1.6 RTE	309000.0	2000	190075.0	Gri	Izmir	Menemen	Badly damaged
2	Skoda	Octavia	1.6 TDI Elegance	517500.0	2011	225000.0	Bordo	Hatay	Antakya	Badly damaged
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4	Ford	Focus	1.6 Comfort	325000.0	2003	359000.0	Bordo	Hatay	Iskenderun	Badly damaged
5	Renault	Megane	1.5 dCi Privilege	335000.0	2006	304000.0	Kirmizi	Gaziantep	Şahinbey	Badly damaged
6	Honda	City	1.4 Comfort	415000.0	2009	105000.0	Gri	Konya	Selçuklu	Badly damaged
7	Fiat	Bravo	1.6 Mjet Easy	450000.0	2012	247500.0	Gri	Istanbul	Kadiköy	Badly damaged
8	Dacia	Lodgy	1.5 dCi Stepway	635000.0	2016	79000.0	Füme	Izmir	Bayraklı	Badly damaged
9	Chevrolet	Lacetti	1.4 SE	339000.0	2008	198000.0	Beyaz	Ankara	Keçiören	Badly damaged
10	Citroen	C3	Picasso 1.6 e-H...	428000.0	2013	156000.0	Beyaz	Kilis	Merkez	Badly damaged
11	Mercedes	-	Benz C 200 D ...	1400000.0	2015	170000.0	Beyaz	Diyarbakır	Yenişehir	Badly damaged
12	Fiat	Egea	1.4 Fire Urban ...	650000.0	2020	32000.0	Bordo	Gaziantep	Şahinbey	Badly damaged
13	Fiat	Egea	1.3 Multijet Easy	690000.0	2023	28500.0	Kirmizi	Niğde	Merkez	Badly damaged
14	Renault	Symbol	1.5 dCi Joy	375000.0	2016	256000.0	Mavi	Istanbul	Bahçelievler	Badly damaged
15	Citroen	C5	1.6 e-HDi ...	515750.0	2012	235000.0	Beyaz	Adana	Seyhan	Badly damaged
16	Opel	Astra	1.3 CDTi Essentia	500000.0	2012	183000.0	Füme	Antalya	Kepez	Badly damaged
17	Audi	A4	Sedan 2.0 TDI	795000.0	2014	269000.0	Beyaz	Gaziantep	Şehitkamil	Badly damaged
18	Audi	A6	Sedan 2.0 TDI	625000.0	2007	420000.0	Beyaz	Konya	Karatay	Badly damaged
19	Audi	A6	Sedan 2.0 TDI	570000.0	2008	333000.0	Mavi	Şanlıurfa	Halliyiye	Badly damaged
20	BMW	3	Exel 330i Coup...	700000.0	2008	333000.0	Gri	Istanbul	Esenyurt	Badly damaged



- Figure 3 : The valuation trend graph according to the models

## 5 Features and Functionalities

- Data Collection: Scrapes details like brand, model, year, mileage, price, and crash reports.
- Data Cleaning: Removes duplicates and invalid entries.
- Data Visualization: Shows valuation trends in graphical form.
- Data Saving: Combines newly fetched data with data.csv.

## 6 Usage Instructions

- Launch the software via terminal.

```
python interface.py
```

- Use the **Fetch Data** button to retrieve listings.
- Apply filters (e.g., brand, price range) to refine data.
- View valuation trends using the graph feature.

## 7 Troubleshooting and Maintenance

- Common Issues:
  - Missing libraries: Ensure dependencies are installed.
  - No data displayed: Ensure filters are valid and data is fetched.
- Error Resolution: Check terminal logs or main.py configuration.

## 8 References

- [https://medium.com/%40datajournal/how-to-make-pythons-beautiful-soup-faster-2d508660486f#%3A~%3Atext%3DSolution%3A%20Use%20the%20find\(\)%2Cunnecessary%20parts%20of%20the%20HTML.%26text%3DBy%20reducing%20the%20search%20scope%2Cespecially%20for%20large%20HTML%20documents](https://medium.com/%40datajournal/how-to-make-pythons-beautiful-soup-faster-2d508660486f#%3A~%3Atext%3DSolution%3A%20Use%20the%20find()%2Cunnecessary%20parts%20of%20the%20HTML.%26text%3DBy%20reducing%20the%20search%20scope%2Cespecially%20for%20large%20HTML%20documents)
- <https://medium.com/%40datajournal/web-scraping-with-python-guide-e54d87166c29>
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