

Used Car Price Evaluation System

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Motivation

- Most used car price evaluation systems focus on data mining and machine learning methods.
- Because of the mileage and production year, the value of used cars is hard to estimate.

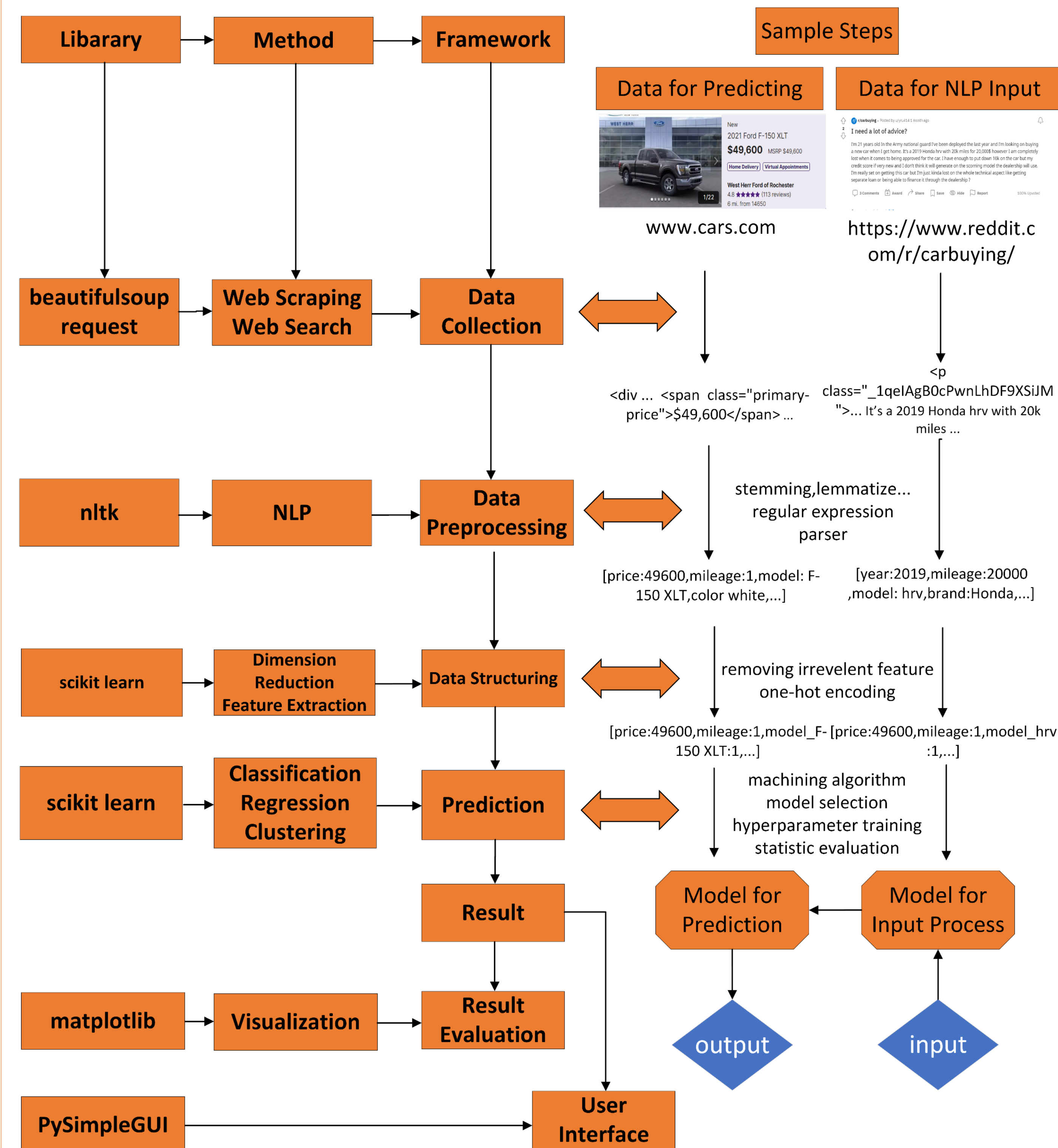
Developed Solution

- NLP extract technical keywords, including production year, mileage, model and brand.
- Python web scrapers to collect data based on the keywords extracted by the NLP process.
- Classification machine learning algorithm to predict price.

Background

- The START QA system is a typical system based on matching natural language processing and information retrieval methods.[1]
- Another type of QA system is more intelligent and can provide answers based on reasoning.[2]
- The linguistic approach tries to understand natural language using NLP techniques such as tokenization, POS tagging and parsing. [3]
- The pattern approach tries to match the pattern from the question and the corpus data.[3]

System



Result

	Input Key Feature (after NLP)	Predicting Price	Actual Price	Difference Percentage
1	2019 Honda Civic Sedan, mileage: 20k	27159	24000	13.0%
2	2016 Audi A3, mileage:50k	24996	22590	10.6%
3	2017 Chevrolet Silverado, mileage:22k	26099	25000	4.3%
Average Difference				9.3%

Status and Concluding Remarks

- The system can dynamically search data from the Internet based on the input data and output the result depending on the hypotheses scores.
- Because of the implementation of data searcher, the system can build corpus in minutes and only keep valuable data.
- Future work includes extending data sources, making the estimated price more accurate, and predicting future prices.

References

[1]	Boris Katz. 1997. Annotating the World Wide Web Using Natural Language. In Computer-Assisted Information Searching on Internet (Montreal, Quebec, Canada) (RIAO '97). 136–155
[2]	Yuyu Zhang, Hanjun Dai, Zornitsa Kozareva, Alex Smola, and Le Song. 2018. Variational Reasoning for Question Answering with Knowledge Graph. In The Thirty-Second AAAI Conference on Artificial Intelligence (AAAI-18). New Orleans, Louisiana, USA, 6069–6076.
[3]	Sanjay K. Dwivedi and Vaishali Singh. 2013. Research and Reviews in Question Answering System. Procedia Technology 10 (2013), 417–424. https://doi.org/10.1016/j.protcy.2013.12.378