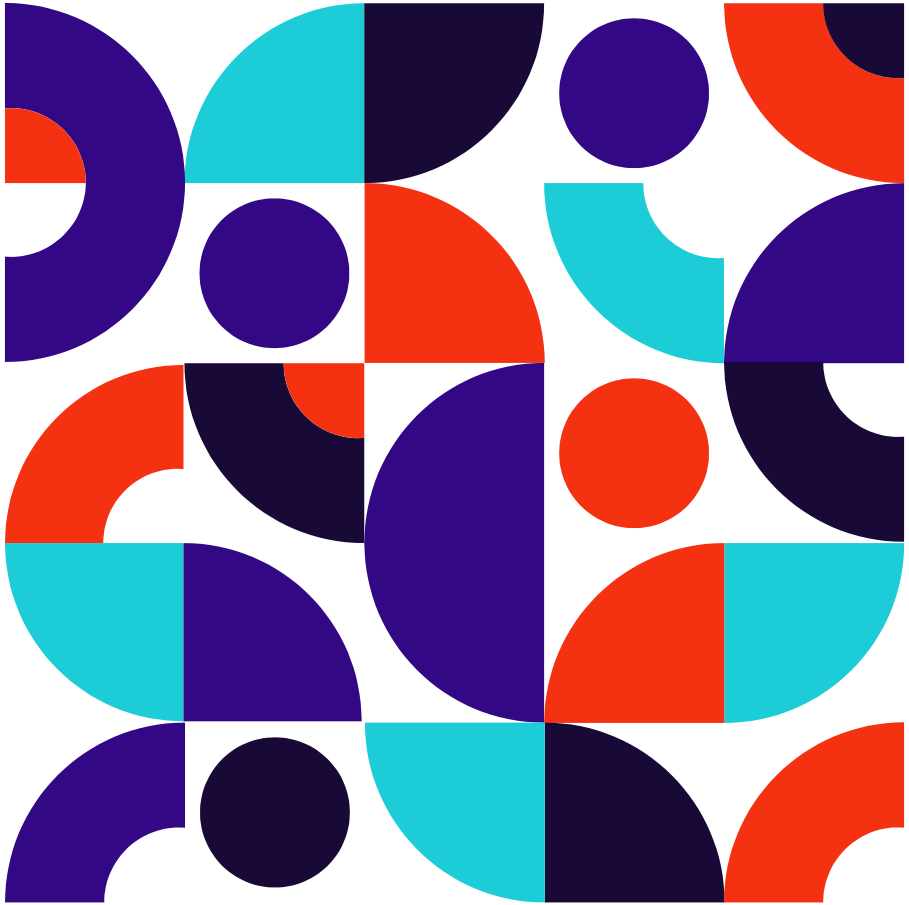
Rating discovery and genre classification from book reviews

Text Analytics

Group 7



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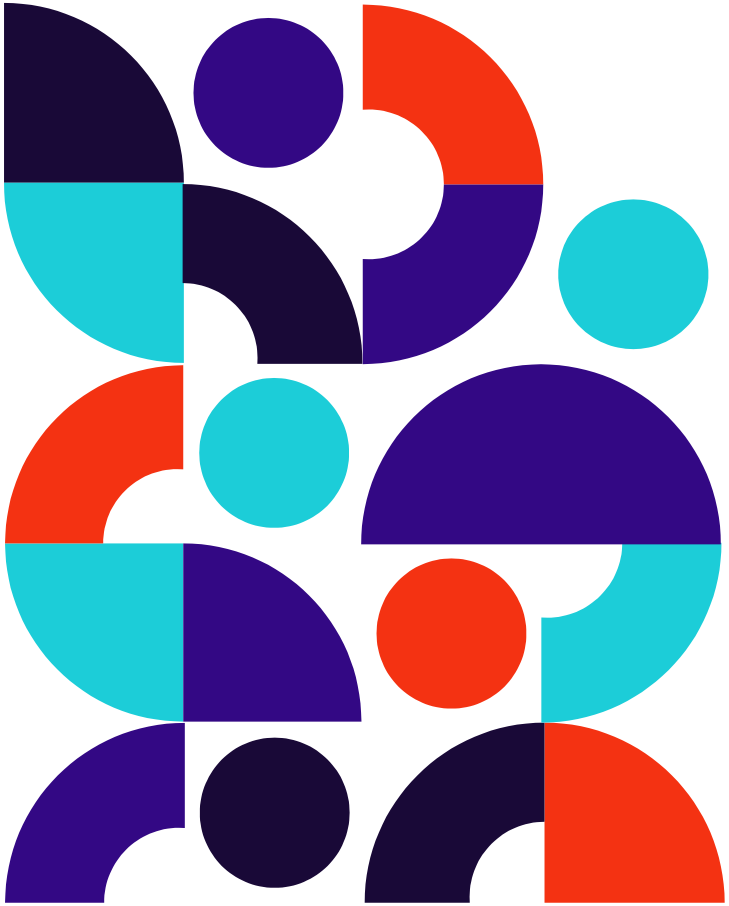
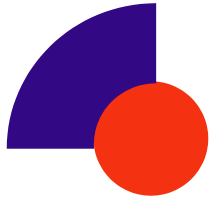


Why this proposal?

Reviews allow **optimal purchasing choices** for book buyers

New platforms give the opportunity to users to express their **opinions** regarding their reading experience



The Goal

- *Developing an automatic system for **predictive product evaluation** based on reviews*

- *Retrieving **customer experiences for the classification** of the book genre*

… How?

Analyzing the structure of the reviews to get insights regarding a book

The dataset

It has been taken from Kaggle and contains more than **1.3M book reviews** (rows), about **25,475 books** and **18,892 users** from the *Goodreads* website

From...

- User id
- Book id
- Review id
- Rating
- Review text
- Date added
- Date updated
- Read at
- Started at
- N° votes
- N° comments

To...

- User id *(int)*
- Book id (int)
- Review id (int)
- **Rating (from 0 to 5)** → *Target*
- Review text (string)
- **Genre (string)** → *Target*

Source:
https://www.kaggle.com/competitions/goodreads-books-reviews-290312/overview

How we reach the “Genre” variable?

… Web Scraping!

https://www.goodreads.com/book/show/ + { **book_id** }

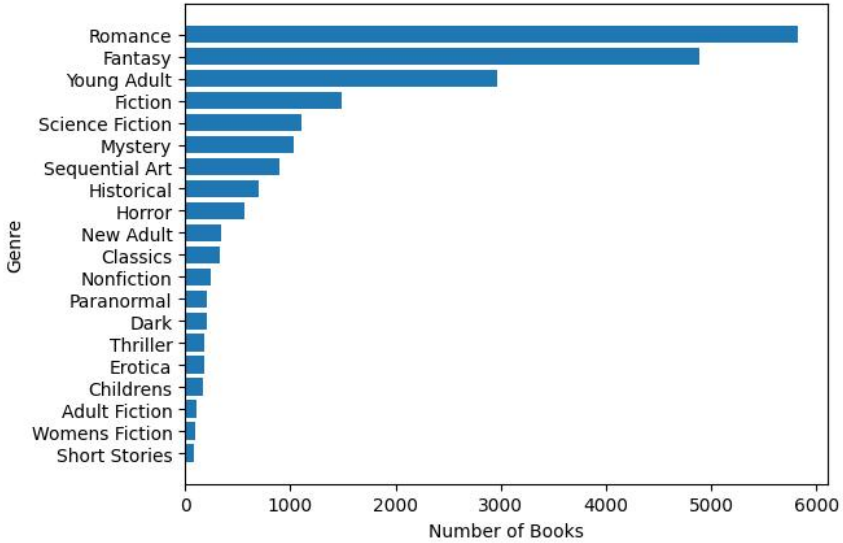
XPath on the page

In total we found **76** genres

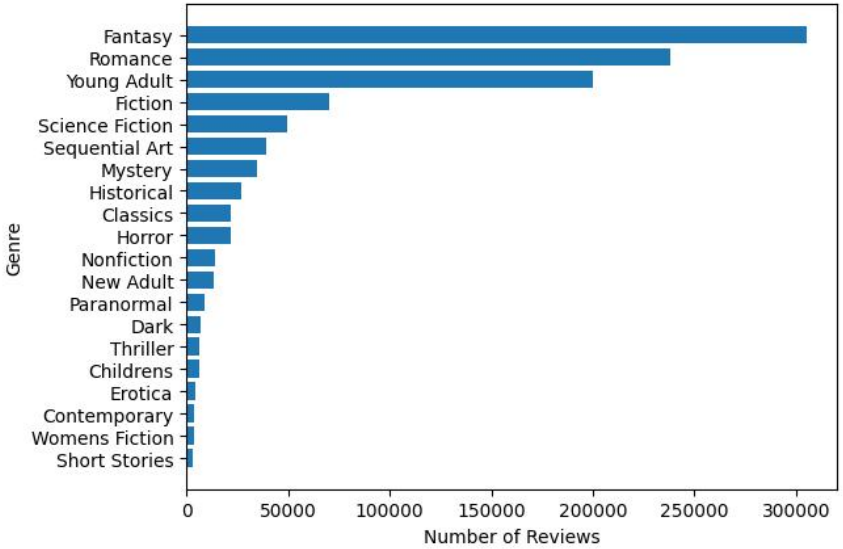
More on “Genre” variable

Since there is a strong genre imbalance, we will **group similar genres** and, if necessary, apply other techniques

In the following bar plots are represented only the first 20 genres



3.3K / 25K **Books** with **NULL** values



280K / 1M **Reviews** with **NULL** values

Classification

Target variable: **Genre**

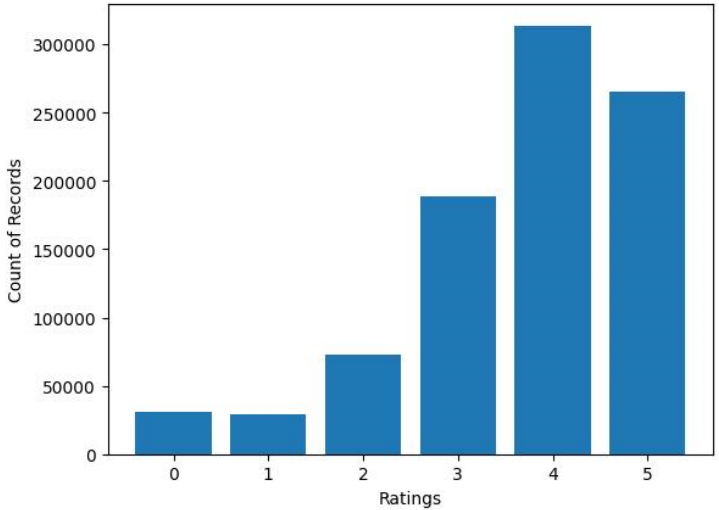
Aim: *Identifying the book genre from the "shelves" of users on the platform*

- SVM
- Neural Network (like BERT)
- Naïve Bayes

Regression

Target variable: **Rating**

Aim: *Identifying the rating of the books from the user emotions expressed by book reviews*



Workflow

1. **Web scraping** using XPath to extract the new variable “Genre”
2. **EDA** (Exploratory Data Analysis)
3. **Regression** task using *“Ratings”* as target variable
4. **Classification** task using *“Genre”* as target variable
5. **Feature Extraction** and **Explainability** (if meaningful) with *SHAP* to explain the prediction of a black box classifier

Thank you!