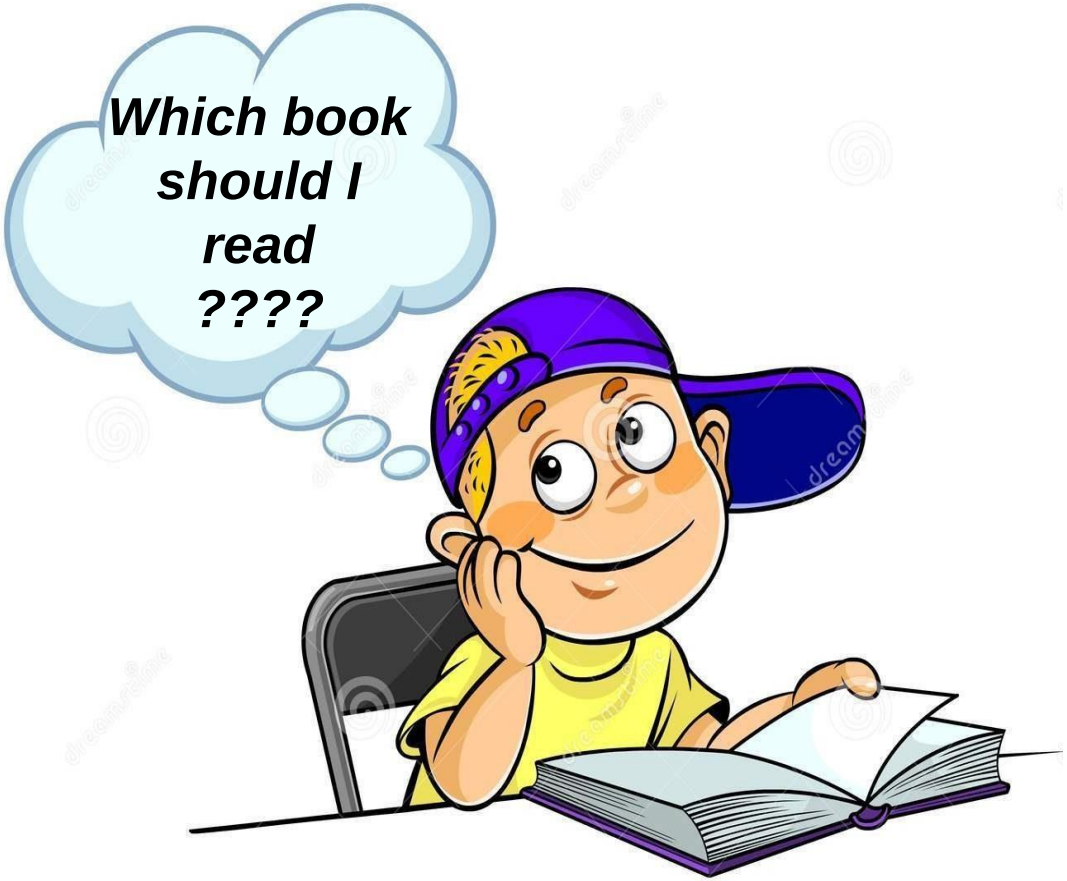
HELLO!

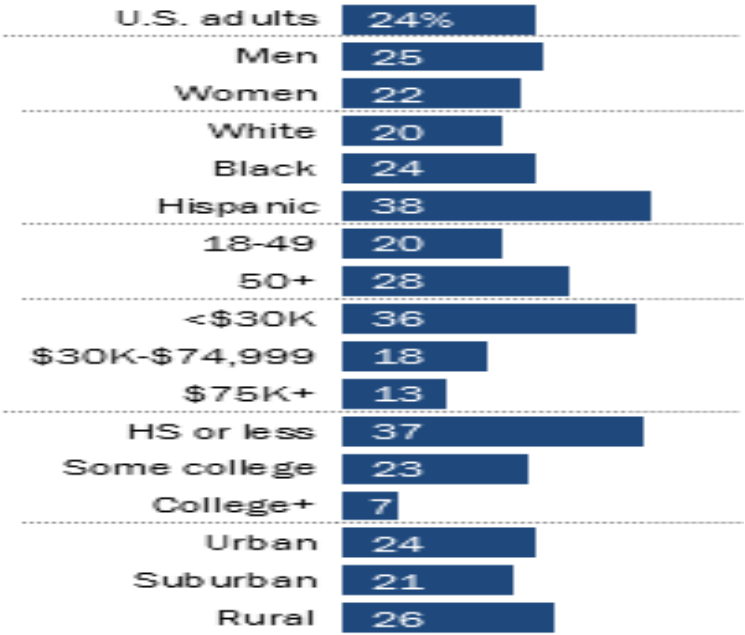
from PRO NOOBS team

I am here to give presentation on **“BOOKTIQUE”**



Who hasn't read a book in the past 12 months

% of U.S. adults who say they have not read a book in any format in the past 12 months



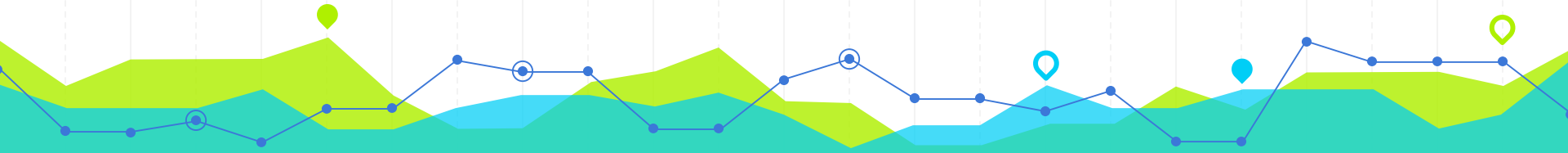
Solution ?

BOOKTIQUE

With the advent of the information society, the increasing number of electronic library information resources in large, they need to find the book is often very difficult.

So we are building a best way of filtering your interest - **BOOKTIQUE**

ABOUT BOOKTIQUE



We are committed to offering the right choices of among **5300 books** to our **1117 users** with unique and different reading tastes with the help of Associate Learning Algorithms.

TECHNOLOGIES USED

Machine Learning Tools

- KNN algorithm
- Numpy
- Pandas
- Matplotlib
- Seaborn
- SkLearn
- SciPy
- Surprise
- Pickle

Web Technologies

- Html/CSS/Bootstrap
- JavaScript
  - Node JS
  - NPM
    - Express JS
    - Mongoose
    - Request
    - EJS
    - Body-Parser
- MongoDB

ILLUSTRATING DATASET

With the help of JUPYTER NOTEBOOK

RECOMMENDATION SYSTEM

A recommender system is a technology that is deployed in the environment where *items (products, movies, events, articles)*are to be recommended to *users (customers, visitors, app users, readers)* or the opposite. Typically, there are *many* items and *many* users present in the environment making the problem hard and expensive to solve. Imagine a shop. Good merchant knows personal preferences of customers. Her/his high quality recommendations make customers satisfied and increase profits. In case of online marketing and shopping, personal recommendations can be generated by an artificial merchant: the recommender system.

Books Dataset

In [4]:
```
1 a.head(10)
```

Out[4]:

	ISBN	Book-Title	Book-Author	Year-Of-Publication	Publisher	Image-URL-S	Image-URL-M	Image-URL-L
0	0195153448	Classical Mythology	Mark P. O. Morford	2002	Oxford University Press	http://images.amazon.com/images/P/0195153448.0...	http://images.amazon.com/images/P/0195153448.0...	http://images.amazon.com/images/P/0195153448.0...
1	0002005018	Clara Callan	Richard Bruce Wright	2001	HarperFlamingo Canada	http://images.amazon.com/images/P/0002005018.0...	http://images.amazon.com/images/P/0002005018.0...	http://images.amazon.com/images/P/0002005018.0...
2	0060973129	Decision in Normandy	Carlo D'Este	1991	HarperPerennial	http://images.amazon.com/images/P/0060973129.0...	http://images.amazon.com/images/P/0060973129.0...	http://images.amazon.com/images/P/0060973129.0...
3	0374157065	Flu: The Story of the Great Influenza Pandemic...	Gina Bari Kolata	1999	Farrar Straus Giroux	http://images.amazon.com/images/P/0374157065.0...	http://images.amazon.com/images/P/0374157065.0...	http://images.amazon.com/images/P/0374157065.0...
4	0393045218	The Mummies of Urumchi	E. J. W. Barber	1999	W. W. Norton & Company	http://images.amazon.com/images/P/0393045218.0...	http://images.amazon.com/images/P/0393045218.0...	http://images.amazon.com/images/P/0393045218.0...
5	0399135782	The Kitchen God's Wife	Amy Tan	1991	Putnam Pub Group	http://images.amazon.com/images/P/0399135782.0...	http://images.amazon.com/images/P/0399135782.0...	http://images.amazon.com/images/P/0399135782.0...
6	0425176428	What If?: The World's Foremost Military Histor...	Robert Cowley	2000	Berkley Publishing Group	http://images.amazon.com/images/P/0425176428.0...	http://images.amazon.com/images/P/0425176428.0...	http://images.amazon.com/images/P/0425176428.0...
7	0671870432	PLEADING GUILTY	Scott Turow	1993	Audioworks	http://images.amazon.com/images/P/0671870432.0...	http://images.amazon.com/images/P/0671870432.0...	http://images.amazon.com/images/P/0671870432.0...
8	0679425608	Under the Black Flag: The Romance and the Real...	David Cordingly	1996	Random House	http://images.amazon.com/images/P/0679425608.0...	http://images.amazon.com/images/P/0679425608.0...	http://images.amazon.com/images/P/0679425608.0...
9	074322678X	Where You'll Find Me: And Other Stories	Ann Beattie	2002	Scribner	http://images.amazon.com/images/P/074322678X.0...	http://images.amazon.com/images/P/074322678X.0...	http://images.amazon.com/images/P/074322678X.0...

Ratings Dataset

In [6]:
```
b = pd.read_csv("BX-Book-Ratings.csv", error_bad_lines=False, encoding = 'latin-1', sep = ';')
```

In [7]:
```
b.head(10)
```

Out[7]:

	User-ID	ISBN	Book-Rating
0	276725	034545104X	0
1	276726	0155061224	5
2	276727	0446520802	0
3	276729	052165615X	3
4	276729	0521795028	6
5	276733	2080674722	0
6	276736	3257224281	8
7	276737	0600570967	6
8	276744	038550120X	7
9	276745	342310538	10

Users Dataset

```
In [8]:  1  c = pd.read_csv("BX-Users.csv", error_bad_lines=False, encoding = 'latin-1', sep = ';')
```

```
In [10]:  1  c.head(n = 10)
```

Out[10]:

	User-ID	Location	Age
0	1	nyc, new york, usa	NaN
1	2	stockton, california, usa	18.0
2	3	moscow, yukon territory, russia	NaN
3	4	porto, v.n.gaia, portugal	17.0
4	5	farnborough, hants, united kingdom	NaN
5	6	santa monica, california, usa	61.0
6	7	washington, dc, usa	NaN
7	8	timmins, ontario, canada	NaN
8	9	germantown, tennessee, usa	NaN
9	10	albacete, wisconsin, spain	26.0

Process – (1)

Getting the dataset ready for training and testing for further process

- Data Analysis
- Data Visualizations

- Data Manipulation
- Data Cleaning

- Split into training
- Split into testing

Process – (2)

- KNN-Basis
- KNN-Baseline
- Matrix Factorization SVD
- KNN-Z-Score

HYPER-PARAMETER TUNNING

Selecting The Ideal Model

KNN-Z-SCORE

*K-nearest neighbors (**KNN**)*

KNN is a **non-parametric, lazy** learning algorithm. Its purpose is to use a database in which the data points are separated into several classes to predict the classification of a new sample point.

K-nearest neighbors (KNN) algorithm

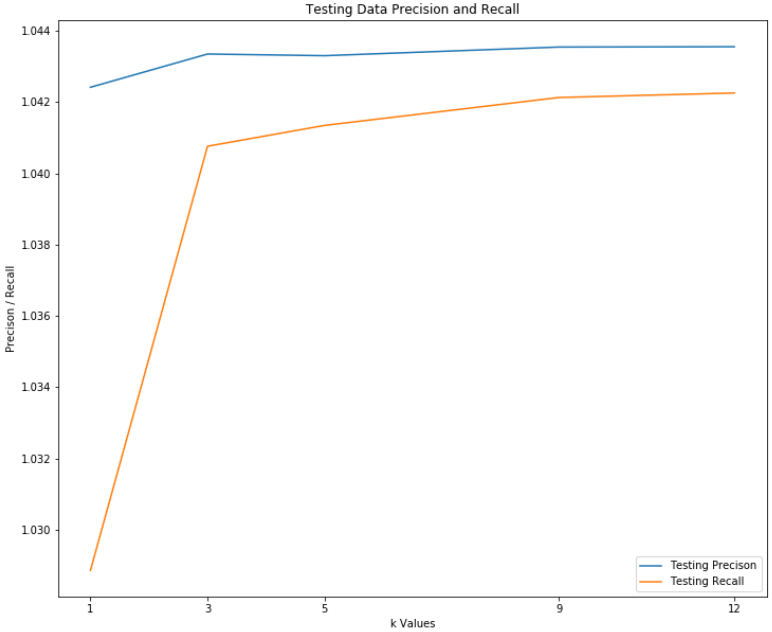
The prediction $\hat{r}_{ui}$ is set as:

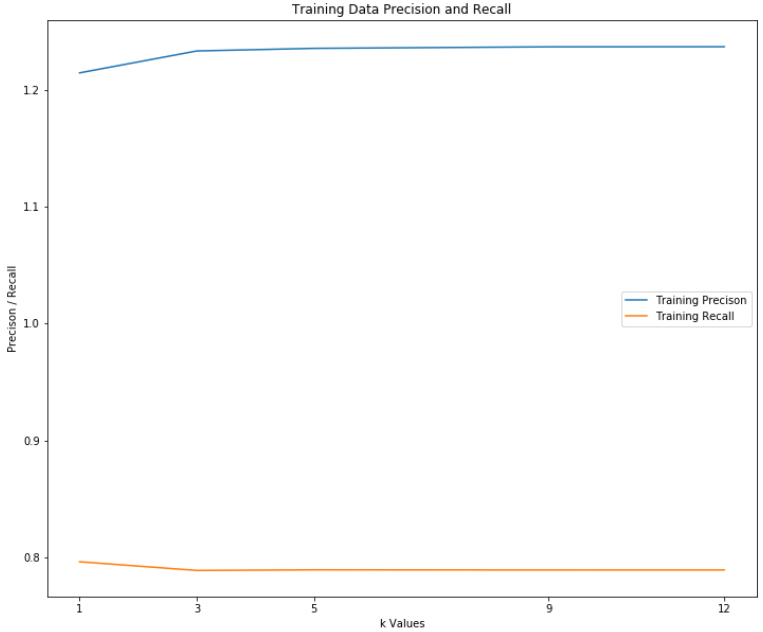
$$\hat{r}_{ui} = \mu_u + \sigma_u \frac{\sum\limits_{v \in N_i^k(u)} \mathrm{sim}(u, v) \cdot (r_{vi} - \mu_v)/\sigma_v}{\sum\limits_{v \in N_i^k(u)} \mathrm{sim}(u, v)}$$

or

$$\hat{r}_{ui} = \mu_i + \sigma_i \frac{\sum\limits_{j \in N_u^k(i)} \mathrm{sim}(i, j) \cdot (r_{uj} - \mu_j)/\sigma_j}{\sum\limits_{j \in N_u^k(i)} \mathrm{sim}(i, j)}$$

TRAINING AND TESTING DATA PRECISION AND RECALL





Mathematically precision@k is defined as follows:

Precision

```
Precision@k = (# of recommended items @k that are relevant) / (#
of recommended items @k)
```

Mathematically recall@k is defined as follows:

Recall

```
Recall@k = (# of recommended items @k that are relevant) / (total
# of relevant items)
```

Process – (3)

Combining Dataset And Gathering Recommendation

- By Collaborative Filtering

- On the basis of :
  - Age
  - Author
  - Location

Final Process

- Frontend
- Backend

Displaying the predictions of Machine Learning Algorithms on website.

SCOPE

- ANN implementation
- NLP application
- Increase the degree of personalization
- Deployment in School / College Institutions

Bibliography

- Book resources from GOOGLE API
  - https://www.googleapis.com/books/v1/volumes
- Research paper from Wang Zongjiang
  - http://proceedings.spiedigitallibrary.org
- Image resources from PEXEL
  - https://www.pexels.com
- Icon resources from FLATICON
  - https://www.flaticon.com
- Improving Recommendation Lists Through Topic Diversification
  - https://grouplens.org/datasets/book-crossing

THANKS!

Any questions?

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