

Business Case #4

Online retailer recommender system

Teaching staff: Fernando Bação, João Fonseca and David Silva

General context

- **Recommender systems** have become a very important part of the retail industries by providing decision-making support to its customers;
- Given the number of possible product choices available, having some extra guidance on these choices can **improve the customer experience** and lead to an **increase in sales**;

General context

- Recommender systems can help users **discover items** they might not have found otherwise;
- Several studies such as Iyengar and Lepper (2000) have proved that when faced with **easy choices**, customers tend to **buy more**;
- As an example of the importance of these systems, 35% of Amazon sales come from recommendations

General context

- Recommender systems usually make use of either or both **collaborative filtering** and **content-based filtering**;
- Collaborative filtering utilizes a **user's past item interactions** (e.g. purchased, viewed, ...) as well as similar decisions made by **other users**;
- Content-based filtering relies on **item attribute data** to recommend items with similar properties to the ones a user has liked in the past;

General context

- There are two kinds of user/ item interaction data available:
 - **Explicit**: A score, such as a rating or a like that indicates **preference**;
 - **Implicit**: An event, such as a click, view, or purchase that indicates **confidence**;
- Implicit data is more frequent, however it just give us **some degree of certainty** on whether a user likes an item (whereas with a rating we are certain);

Business situation

- **ManyGiftsUK** is a UK-based non-store online retailer that is focused on selling **unique all-occasion gifts**. The company was established in 1981 but has only recently shifted **completely online**;
- With the new data the company has collected, they expect to **build a recommender system** that is able to facilitate user choices;
- A particular challenge is the **cold start problem** - how can we suggest relevant items to new customers?

Business **situation**

- The customer transaction dataset comes with some **metadata**, available in the associated README file;
- It contains all the transactions occurring between **01/12/2010** and **09/12/2011**;
- Over this period, there were **25900 valid transactions**, associated with **4070 unique items** and **4372 customers** from 38 different countries. **541909 user/ item interactions** were registered;

Business **situation**

- **Expected outcomes:**
 - Explore the data and build models to answer the problems:
 - I. Recommender system: appears in the website homepage and offers a wide range of relevant products to each user;
 - II. Cold start: offer relevant products to new customers;
 - Implement adequate evaluation strategies and select an appropriate quality measure
 - In the deployment phase, elaborate on the challenges and recommendations in implementing the recommender system