Recommending without short head

Paolo Cremonesi, Franca Garzotto, Roberto Pagano, Massimo Quadrana

Department of Electronics, Computer Science and Bioengineering, ***Politecnico di Milano****, Milan, Italy*

THE PROBLEM ❶

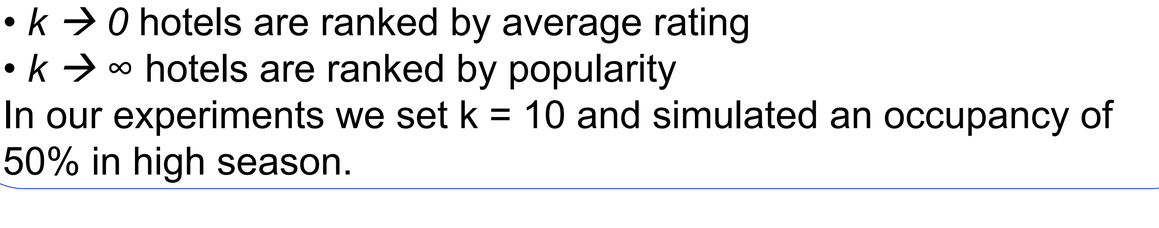
Recommender Systems (RSs) tend to enforce the popularity of already popular products (*short-head*).
They often assume an *unlimited* capacity of the products in the catalog and are often trained on *popularity-biased datasets*.

How RSs behave when the most appealing products become unavailable?

Focus of our research: E-tourism domain
(hotels are subject to change their availability over time)

MODELING AVAILABILITY ❷

Users tend to book "**best**" hotels first - both the **most popular** and **the best rated** ones
- In *low season* most of the hotels are available (full availability)
- In *high season* the best hotels are gone (bounded availability)



To select the best hotels in the catalog, both popularity n_i and average rating μ_i should be taken into account. We ranked the hotels according to the *shrank rating:*

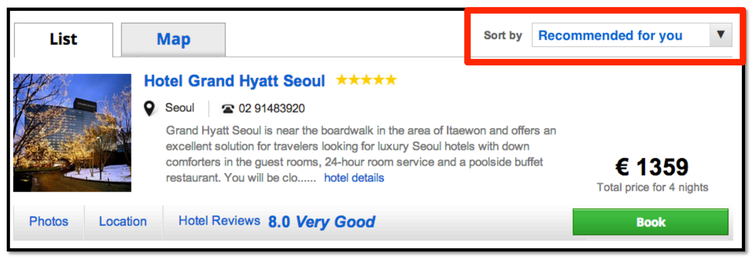
$$r_i = \frac{\mu_i n_i + k n_i}{n_i + k}$$

- $k \rightarrow 0$ hotels are ranked by average rating
- $k \rightarrow \infty$ hotels are ranked by popularity

In our experiments we set k = 10 and simulated an occupancy of 50% in high season.

USER STUDY ❸

Experimental setup:
- *PoliVenus*, a full sized simulation of **Venere.com** (except payment)
- Added both non-personalized and personalized recommendations
- **3k** hotels, **210k** user reviews (Venere + TripAdvisor)
- **382** participants aged between 20 and 40



Recommendation quality:
- *Subjective variables,* (e.g., *satisfaction*) measured using a web based questionnaire based on ResQue model
- *Objective variables*, such as *average cost per night* and *average task execution time,* measured using interaction log data

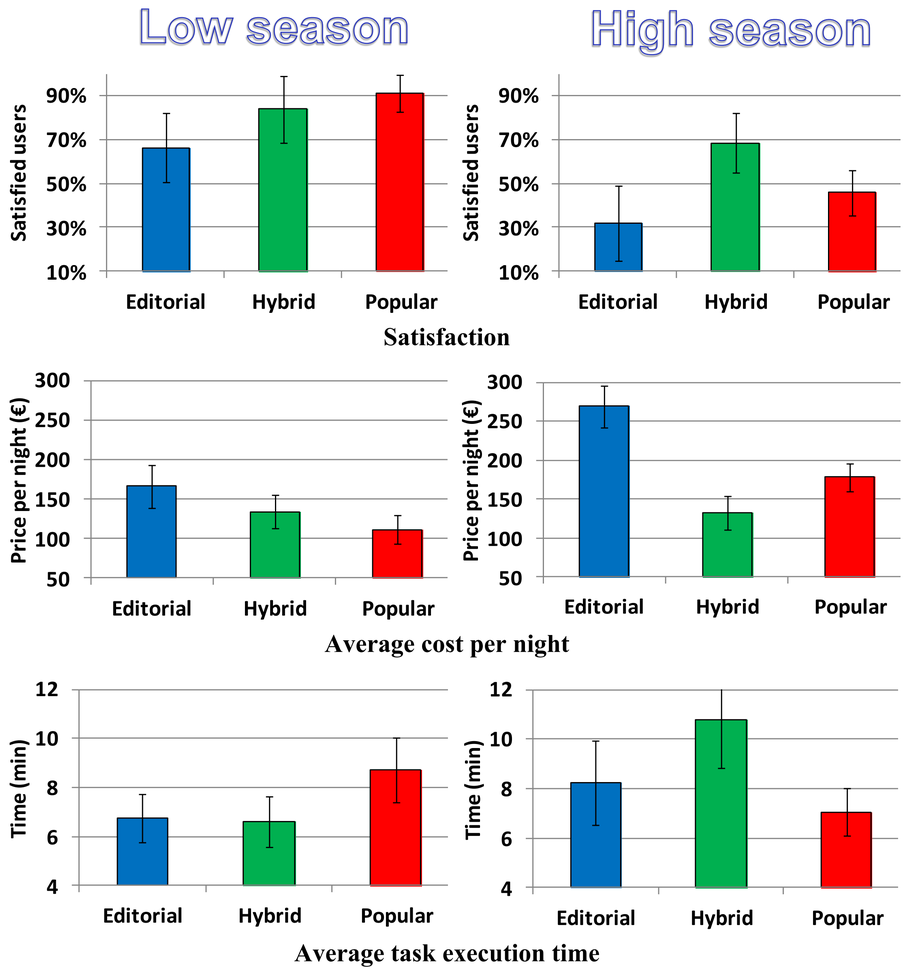
6 Experimental conditions:

Availability
- Low season
- High season

X

Algorithms
- Editorial — *Baseline non-personalized*
- Popular
- Hybrid — *PureSVD + ContentBased*

RESULTS ❹



Effects of product consumption and unavailability of short head items:
- **Weakening of the performance of popularity based recommenders**
- **Enforcing the benefits of personalized recommendations**

CONTACTS

Paolo Cremonesi — Franca Garzotto — Roberto Pagano — Massimo Quadrana

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