



Specific challenges for tourism recommender systems seen from academic and the industry perspectives

Panel Discussion

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About us

The screenshot displays the Trivago search interface for hotels in Como. The search criteria are: "Como, 4 star, very good rating, 5 star, 3 star", with a check-in date of Sunday, 08/27/17 and a check-out date of Monday, 08/28/17. The search results are sorted by popularity and show 8 out of 423 hotels. The top four results are:

- Cruise**: 4 stars, 82 Very good (2184 reviews), 3.4 miles to City center, Free WiFi. Price: €76 (was €100, -24% off). Booking.com.
- Avenue**: 4 stars, 84 Very good (584 reviews), 0.2 miles to City center, Free WiFi. Price: €68 (was €172, -60% off). Booking.com.
- B&B Hotel Como**: 3 stars, 81 Very good (270 reviews), 1.6 miles to City center, Free WiFi. Price: €68 (was €91, -25% off). Expedia.
- Hotel Borgovico**: 3 stars, 82 Very good (1083 reviews), 0.5 miles to City center, Free WiFi. Price: €58 (was €108, -46% off). Booking.com. Includes Free breakfast.

Filters on the left include: Top Filters, Extra Filters, Stars (1-5), Rating (0+ to 85+), Price (€58 to €177), Distance from (City center), and Top options (Pets, Beach, Free WiFi, Breakfast, Pool).

- **Mission:** Helping the travelers to find their ideal hotel at the best price
- **Main Product:** Hotel meta-search
 - Hotel feature, price, advertiser comparison
 - Search criteria, Map, Sort orders
 - Ranking of hotels, adv. relevance
 - Redirection
- **Problem size:**
 - 100M+ visitors per month
 - 1M+ hotels
 - 250 advertisers (booking sites)
- **Primary business model:** Cost-per-click

Hotel domain

Main challenges:

1. Expensive transactions, price sensitivity
2. Frequency of the interactions (next travel, search sessions, low booking ratio)
3. Unstable preference (seasonality, domain knowledge, contextuality, multi-criteria optimization)
4. Online booking vs. real world
5. Business goals vs. user goals

Meta-search

Main challenges:

1. User Journey (limited tracking users after redirection, lack of feedback about the booked hotels)
2. Healthy marketplace (recommendation of advertisers, hotel inventory)
3. User Engagement (trivago to booking sites, high bounce rate, moment of truth)
4. Lack of registration (identification issues, campainings)
5. Business model (click- or acquisition based revenue, short- vs. long-term revenue)

Product

Main challenges:

1. Real-time service (production, scalability, responsiveness, reliability)
2. Online KPIs (user reactions, business KPIs, multi-criteria, offline vs. online opt., A/B testing)
3. Personalization is more about recommendations
4. Productivity vs. completeness (workarounds, hard deadlines)
5. Cost of experimentation/monitoring (risk, failure, maintenance)

Further factors

Factor*	Description	Trivago
Heterogeneity	Diversity of the characteristics and goals of the items in the inventory.	Low
Risk	User's tolerance for false positives among the recommendations.	High
Churn	Probability of leaving the website, getting unavailable.	Low-High
Interaction style	Preference elicitation. Implicit or explicit feedbacks.	Both
Preference stability	Stability of the preference of the user over time.	Unstable
Scrutability	Demand for education and explanation.	Required

*Burke, Robin, and Maryam Ramezani. "Matching recommendation technologies and domains." Recommender systems handbook. Springer US, 2011. 367-386.

Thank You!

Questions?