User Experience of Recommender Systems

Conversational Recommendations | Beyond Accuracy Measures | Evaluation Protocols

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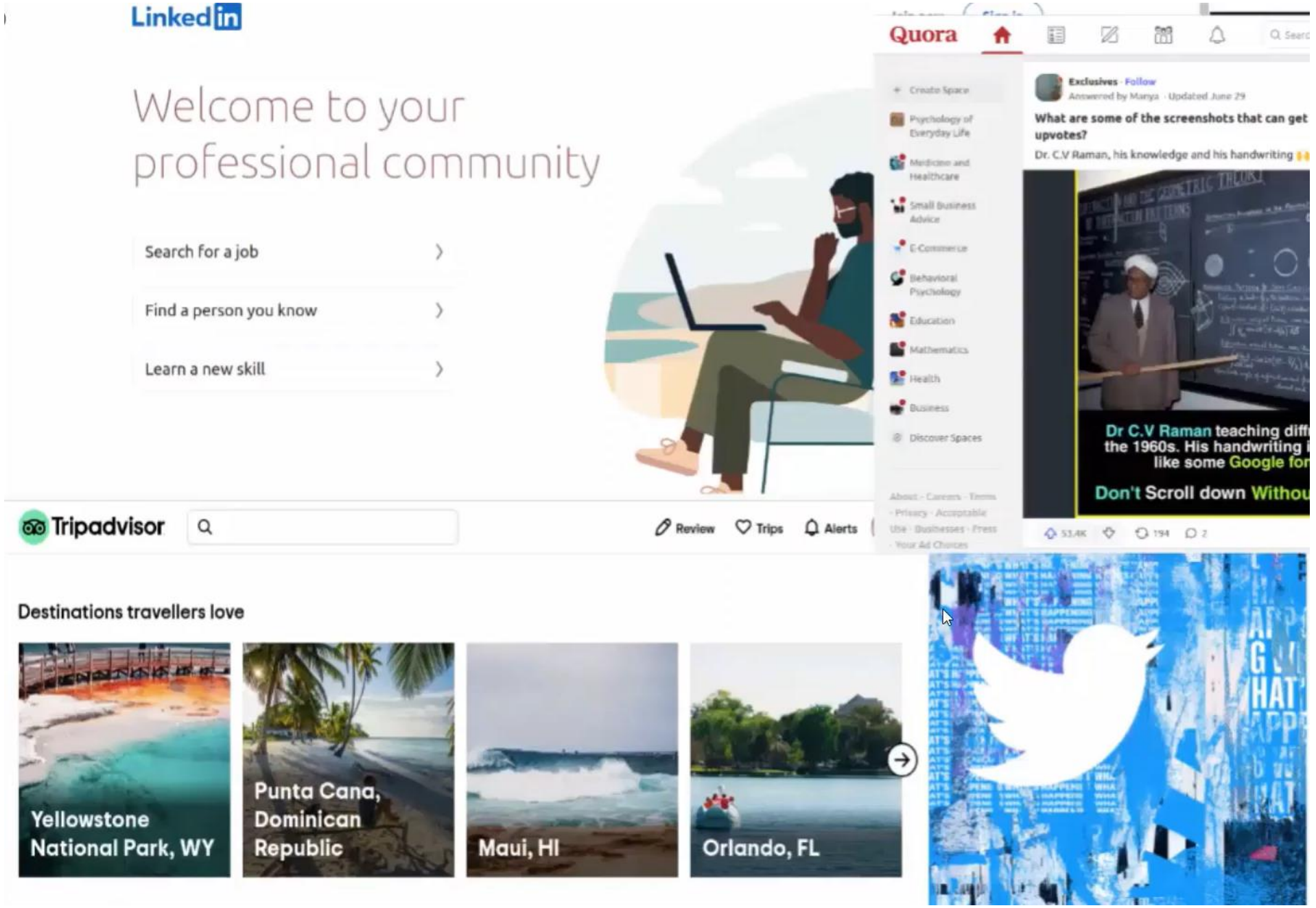
What is Recommender Systems?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What are some of the screenshots that can get upvotes?
Dr. C.V Raman, his knowledge and his handwriting
Dr C.V Raman teaching diff
the 1960s. His handwriting i
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Don't Scroll down Withou
Tripadvisor
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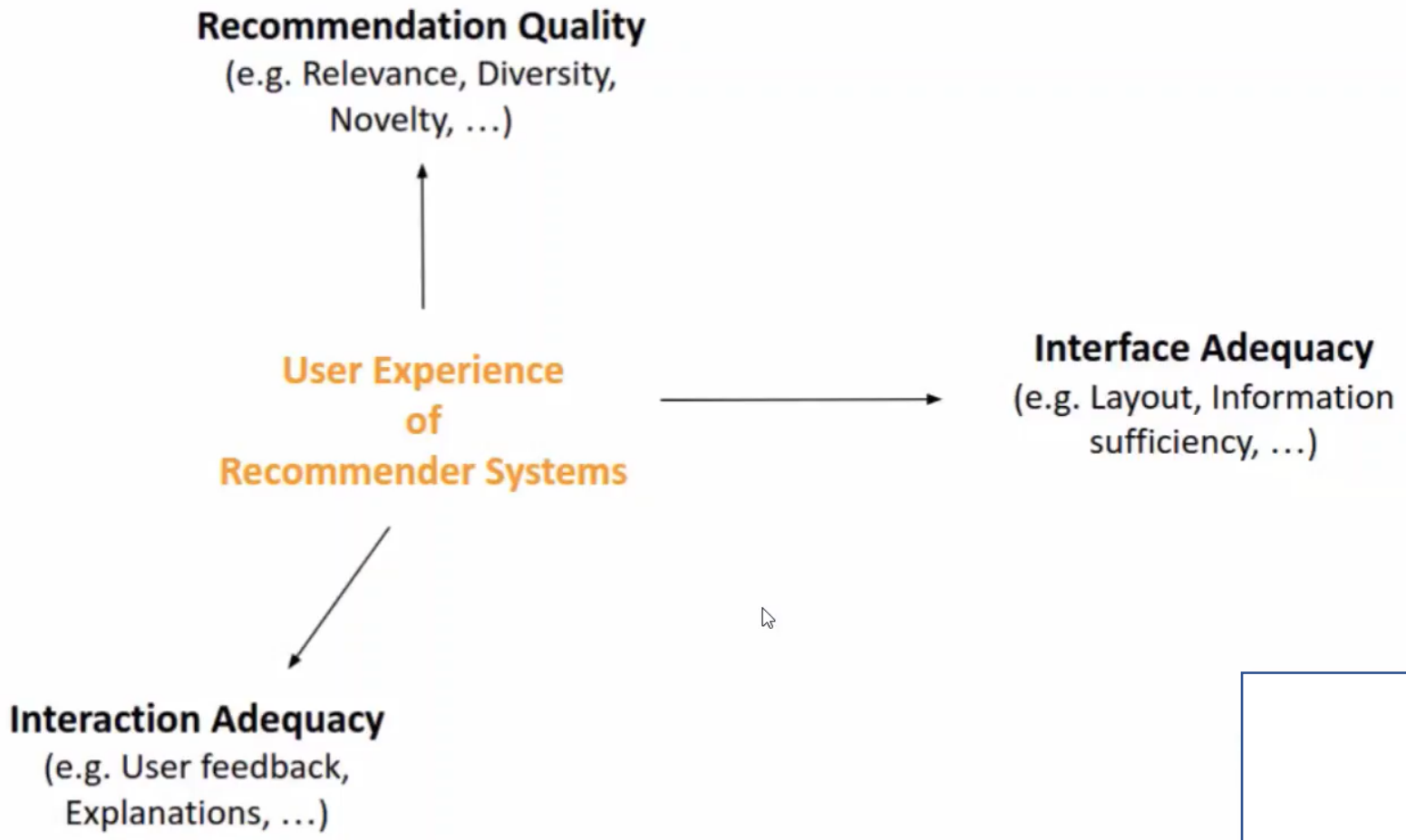
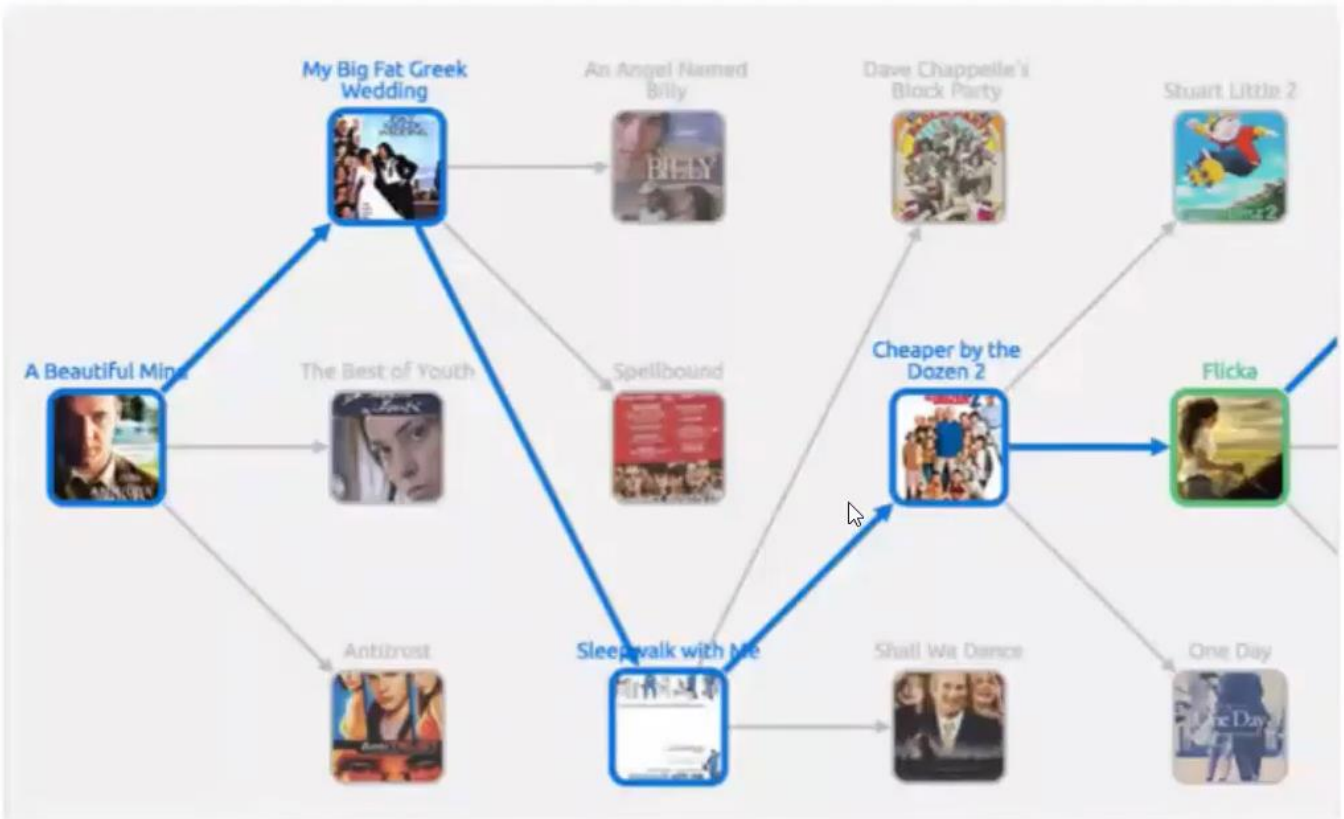
Alerts
Destinations travellers love
Yellowstone National Park, WY
Punta Cana, Dominican Republic
Maui, HI
Orlando, FL

User Experience: Three Dimensional View



Conversational Recommendations

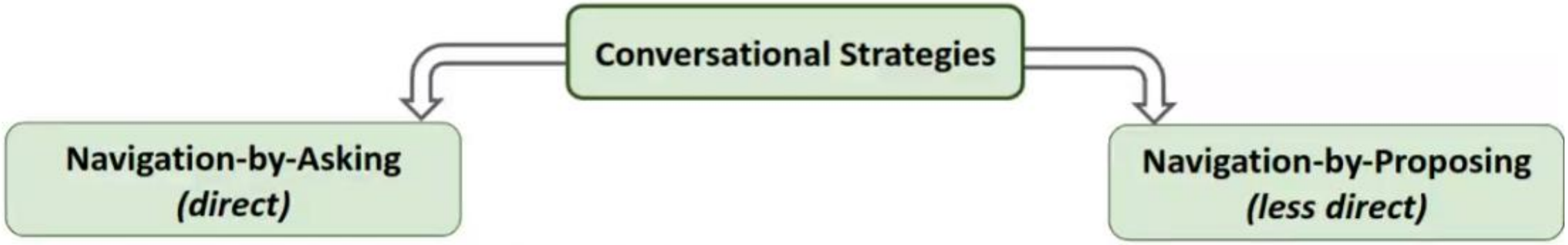
Conversational Recommender System: *Recommend* → *Review* → *Refine*



Conversational Recommender System: *Recommend* → *Review* → *Refine*

- When users are not satisfied with initial top-n recommendations
- When users have ephemeral goals different from their usual tastes
- When user requirements are uncertain or are not fully observable (e.g. context, the user's mood, her companions, etc.) [Pu & Chen 2008]
- Achieves higher level of trust and transparency, and greater acceptance by enabling users to steer the recommendation [He et al. 2016]

- Pearl Pu and Li Chen. User-involved preference elicitation for product search and recommender systems. AI magazine, 29(4):93, 2008.
- Chen He, Denis Parra, and Katrien Verbert. Interactive recommender systems: A survey of the state of the art and future research challenges and opportunities. Expert Systems with Applications, 56:9–27, 2016.



- **Value elicitation**

User provides a value for a specific attribute.

e.g. I want a 2.4GHz Intel core I5 processor laptop.

- **Critiquing**

User proposes *tweaks* to attribute values.

e.g. Show me more like option A, but *cheaper*.

- **Rating-based**

User *rates* the recommended items without consuming them.

e.g. Show me more like 20% of option A, 40% of option B, and 70% of option C.

- **Preference-based**

User simply *selects* one of the recommended items.

e.g. Show me more like option A.

- Hideo Shimazu. ExpertClerk: A conversational case-based reasoning tool for developing salesclerk agents in e-commerce webshops, Artificial Intelligence Review, 18(3-4):223–244, 2002.
- Lorraine Mcginty and Barry Smyth. Adaptive selection: An analysis of critiquing and preference-based feedback in conversational recommender systems. International Journal of Electronic Commerce, 11(2):35–57, 2006.

Recommendation Quality: Serendipity

Serendipity *(measure of "delightful unexpectedness" of the recommendations)*

- **Unexpectedness *(measure of "surprise" to the user)***
  - Not expect to find item on her own [Herlocker et al. 2004, Ge et al. 2010]

    OR

    Not expect to enjoy [Adamopoulos and Tuzhilin, 2014]
  - Measured as dissimilarity of the recommended item from the items user typically consumes [Kaminskas & Bridge, 2016]

Recommendation Quality: Serendipity

Serendipity ***(measure of "delightful unexpectedness" of the recommendations)***

- **Novelty** ***(measure of being "unknown" to the user)***
  - Measure of being "unknown" [Herlocker et al. 2004, Kaminskas & Bridge, 2016]
  - Users don't prefer novel recommendations unless they trust the system [Kapoor et al. 2015]
  - Measured as an inverse of popularity [Kaminskas & Bridge, 2016]

Conclusions

- **Challenges in Recommendations Being Useful**
  - *Diversity* and *Accuracy* are in trade-off
  - *Personalization* and *Accuracy* are in trade-off (still lots of people want popular stuff)
  - *Novelty* is not always good
  - *Explainability* is hard – technically and as per user understanding
- **Need a Bridge** between
  - Expertise from Marketing and Psychology
  - Expertise from Efficient Computation
  - Studies >> Metrics >> Algorithms

- Josaph A. Konstan. Recommender Systems: Beyond Machine Learning. ACM Webinar Series (10/8/2019). [https://www.youtube.com/watch?v=uupJmZG5xxA]