News recommendation is a specific task in the area of recommender systems because of both the nature of items (news volatility, dynamic popularity, textual content, etc.) and the need to evaluate recommendation algorithms in real-time. Challenges are a fun way to stimulate research. We propose a platform called RENEW to host a news recommendation challenge. The platform provides the evaluation service for contenders programs submitted by research teams. To our knowledge, this platform is the only one which offers a user application fully dedicated to the cross-website and cross-language news articles recommendation task. It also offers a large panel of context/demographic clues and a long-term user history through a dedicated mobile app.

**Our plans and perspectives**

**Users’ mobile app**

- What data do we collect?
  - Contextual data: geolocation, battery level, network speed.
  - Behavior analytics: click, scroll, read time, share, item deletion...
  - Twitter and Facebook connection providing social network data.

- Why?
  - To provide rich clues to recommender systems
  - To analyse recommender systems performances
  - Positive and negative implicit feedback through rich behavior analysis (read and scrolling)
  - Against CTR (Click-Through Rate) metric which considers a click as the main indicator

- The Renewal mobile app
  - The central concept is built around 2 kinds of recommendations: diverse recommendations on the main page and complementary recommendations below each news article as the main NewsREEL task [1]
  - We use the React Native framework for a responsive UI

- The Renewal platform

  - Online evaluation
    - We provide the opportunity to evaluate algorithms on online settings which measure the true user satisfaction [2]
    - We analyse user behaviors to provide a real-time performance analysis
    - All statistics are displayed on www.renewal-research.com

  - Renewal platform’s properties
    - A distributed architecture for indexing
    - A subset of all users is assigned to each recommender system to relieve the user profile modeling scalability issues.
    - Given n as the number of users, a as the number of recommender systems per user and m the total number of recommender systems, y the number of assigned users per system is:

- Teams’ recommender systems

  - Get started
    1. Subscribe on www.renewal-research.com
    2. Download our baselines in Java / Python / C++ and see the code on GitHub to learn how to use
    3. Design your own recommender system and deploy it on your own server
    4. Watch performance curves in real-time and compare your algorithms to others
    5. Contribute to the research in the recommender system field by writing papers showing your results

  - Systems’ properties
    - Unavailability tolerance: your system is not server-oriented, instead, you just need to access the API and your dedicated queues using credentials.
    - Recommendation are preloaded in mobile apps, so you don’t have a short response time constraint, it prevents scalability issues

- Evaluation strategy

  - The evaluation is based on A/B testing
  - Users are assigned to each recommender system on a weekly basis
  - When the mobile app requests lists of recommendations, the request dispatcher module redirects the request to all affected systems.
  - The performance analyser gets events from the event stream and computes the positive feedback rate

- Teams’ recommender systems

  - What do we index?
    - News articles from multiple RSS feeds and other sources
    - User data from social networks and the Renewal mobile app
    - User behaviors

- Try your own algorithms

  - Tackle the user cold start using user data from social networks [3]
  - Tackle the item cold start which is specific to the news recommendation due to the recency / short lifespan of news constraints [4]
  - List-based filtering becomes relevant
  - NLP methods or a diversity / popularity trade-off using reinforcement learning could be used

- How to recommend news articles?

  - 1. Use the event stream to grab news articles and user behavior
  - 2. Use the API to request news content, popularity information, user data...
  - 3. Receive a recommendation request from a user by taking it from the rec requests queue
  - 4. Send your recommendation lists (which is a subset of news articles IDs) in the news recs queue
  - 5. You can precompute your recommendations, or just compute it directly when you receive a recommendation request, you can also update your recommendation lists periodically

- Our plans and perspectives

We plan to launch the platform in late 2018. A 1-month evaluation will be organized as part of an evaluation campaign during the year 2019. We also plan to organize specific challenges, e.g. on the recommendation explanation, or by filtering a subset of users (those who filled in their demographic info, those linked to social networks...). Given the mobile app and registered users, there are many opportunities for research purposes: *crowd-labeling* (fake news detection, quality, readability, writing style...), *integrating a personality survey* to try personality-based recommendation algorithms...

**References**


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