



Conducting Recommender Systems User Studies Using POPROX

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ABSTRACT

The Platform for Open Recommendation and Online eXperimentation (POPROX) is a new resource to allow RecSys researchers to conduct online user research without having to develop all of the necessary infrastructure and recruit users. Our first domain is personalized news recommendations – POPROX 1.0 provides a daily newsletter (with content from the Associated Press) to users who have already consented to participate in research, along with interfaces and protocols to support researchers in conducting studies that assign subsets of users to various experimental algorithms and/or interfaces.

The purpose of this tutorial is to introduce the platform and its capabilities to prospective research users while walking through the implementation of a sample experiment so that researchers can proceed to propose and carry out experiments on the POPROX platform.

CCS CONCEPTS

• **Human-centered computing** → *User studies*; • **Information systems** → **Recommender systems**.

KEYWORDS

recommender systems, user studies, experimental infrastructure

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1 AUDIENCE

The tutorial is targeted at recommender systems researchers at all levels (graduate students, postdocs, faculty, industry). No prerequisite knowledge required.

2 OUTLINE

The tutorial will begin with an introduction to the Platform for Open Recommendation and Online eXperimentation (POPROX), including the aims of the platform and its timeline. We will

describe the intended capabilities of the platform including the ability to experiment with different algorithms and to obtain survey responses from users in addition to behavioral data, helping recommender systems researchers shift towards rigorous user-centered research.

Participants will learn what kinds of studies are a good fit for the POPROX architecture. We will also discuss the researcher agreement required of all experimenters (which protects both user privacy and intellectual property) and the terms under which POPROX experiment designs and datasets will be released for researcher use.

We will review some example experimental studies. After this introduction, we will go deeper into the POPROX architecture, describing its structure, implementation, underlying data model, and implications for experimenter code. POPROX is cloud-based (AWS) service and we expect that experimenters will want to co-locate their code for best efficiency. We will also describe the standard offline, behavioral, and survey-related metrics reported by the system.

We will provide a walk-through of experimenter interaction with POPROX, looking at how a hypothetical experiment design might work its way from study design to live experiment on the system. This will give us a chance to touch on the different stages of the experiment lifecycle:

- **Intake:** the concept of the experiment is developed and its fit with the POPROX platform is assessed.
- **Specification:** the technical aspects of the experiment are fleshed out and the sequence of experimental manipulations and conditions are finalized. In this stage, we also require that experimenters get local IRB approval for their experimental protocols.
- **Testing:** At this point, experimenters will be ready to implement their recommendation code and develop others aspects of their system in preparation for testing on the platform.
- **Operational:** Once the experiment is ready, it goes live and experimenters will get continuous feedback on their system's operation.
- **Closeout:** In this stage, experimenters get data and metric exports from their experiments. We will detail the various metrics used for reporting, and the exported data can be used in further analysis.



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POPROX manages the interaction with experiment participants and this makes the IRB review process a bit different from typical user studies. We will discuss these differences and the different forms of review that POPROX has already undergone, so that researchers are prepared to develop compatible IRB protocols at their own institutions.

Finally, we will cover POPROX's interface with the research community: how proposals are accepted and reviewed, and the consulting services that we offer. We will close with time for discussion including hearing from tutorial participants about experiments they hope to conduct and features they would like to see the platform implement.

3 MATERIALS

The POPROX researcher documentation, of which this tutorial is an introduction and summary, is at <https://docs.poprox.ai>. Tutorial slides will also be available in the documentation after RecSys 2024.

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