A generalized data dashboard to visualize user interface logging in IIR experiments

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Background

Logging and analysis user interactions is commonplace in the IIR field, LogUI is a framework that aims to simplify this process.

Parsing and analysing log files exported from LogUI can be difficult and time consuming.

Research questions

RQ1: Which behavioural metrics do IIR researchers generally look for when performing user interface experiments?
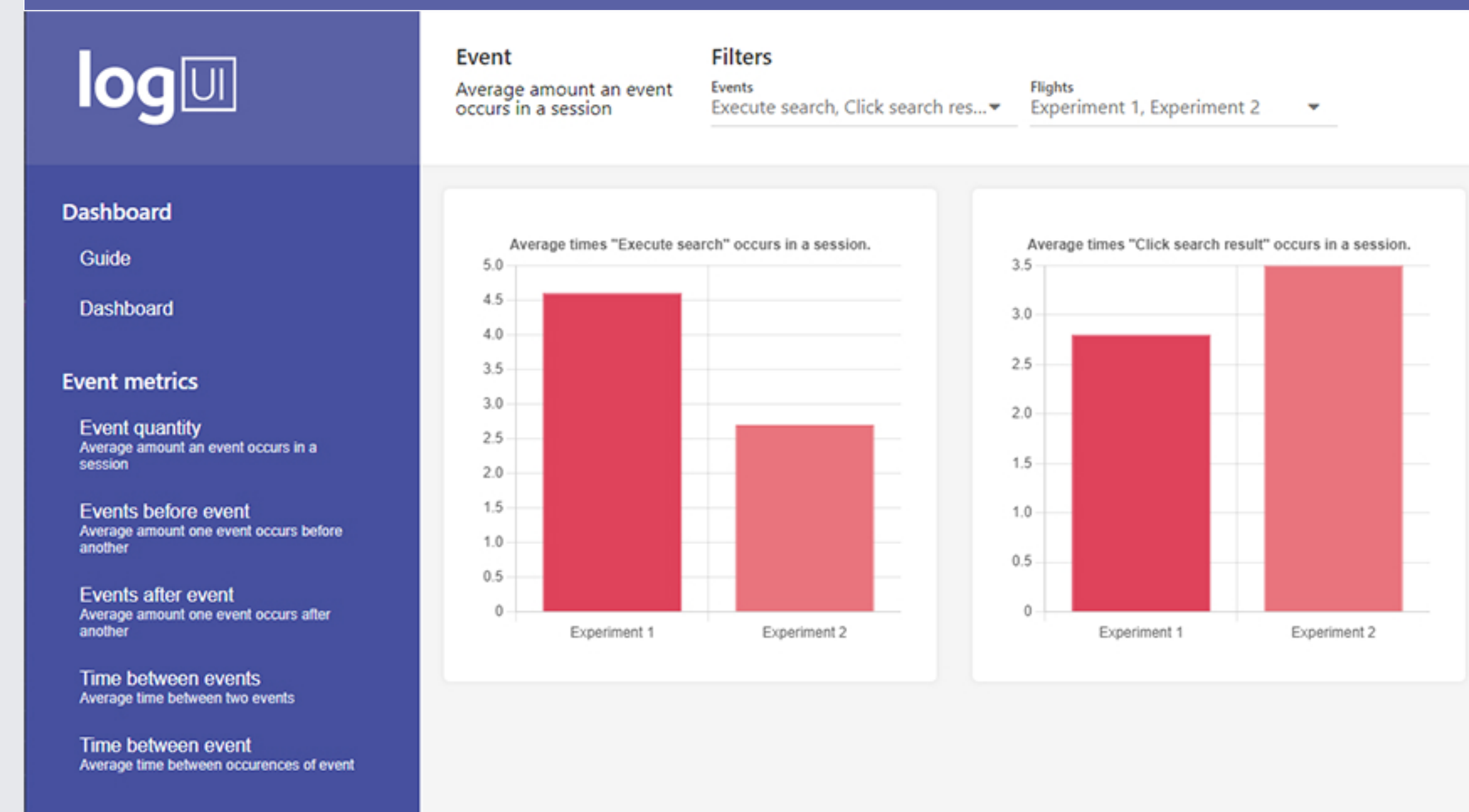**RQ2:** How can we present a summary of logging data that allows the user to perform an exploratory analysis on the data?

Poplar metrics

We went over existing papers in the IIR field to find the most **popular metrics**:
- Average count of event X per session.
- Average time between event X and event Y per session.
- Average time between occurrences of event X.
- Average count of event X before event Y per session.
- Average count of event X occurs after event Y per session.

Dashboard

logUI

Event
Average amount an event occurs in a session

Filters
Events
Execute search, Click search res...

Flights
Experiment 1, Experiment 2

Dashboard
Guide
Dashboard

Event metrics
Event quantity
Average amount an event occurs in a session
Events before event
Average amount one event occurs before another
Events after event
Average amount one event occurs after another
Time between events
Average time between two events
Time between event
Average time between occurences of event

Average times "Execute search" occurs in a session.
Average times "Click search result" occurs in a session.

Method

User study flow
1. Shortly introduce the dashboard.
2. Monitor the participant through Zoom screen sharing while they independently use the dashboard to run simple experiments.
3. Let the participant fill the User Experience Questionnaire (UEQ) to obtain quantitative
4. Have a semi-structured interview to discuss their use of the dashboard.

The UEQ is a survey consisting of 26 opposing qualities where the participant is asked to rank on a scale of 1 to 7 how much the application matches that quality.

Results

Average time to answer all four research questions: 5 minutes and 19 seconds

Only one participant was unable to answer one question

Suggested improvements:
- Unclear wording in metric
- Show probability distribution
- Show individual user data instead of only averages
- Add more advanced filtering e.g. custom LogUI properties

UEQ results: