A Tool for Registering and Replaying Web Navigation

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Scenario (I)

- Web Application – **AJAX** technology

- Sources are **not** available
  - Third party
  - Black box
Scenario (II)

- GUI testing
  - Functional
  - Security
  - Regression
  - ...

- (Some) Essential requirements
  - Ability to navigate / crawl automatically
  - Ability to repeat specified sequences
(Some) key problems

- GUI elements do **not** have unique identifiers suitable for programmatic discovery

- How to identify «the same» element when replaying a recorded trace?

- What if «that» element no longer exists?
Example

Figure 1. Appearance of Amazon home page during the recording (left) and the last replays (right).
Our work

- **Record** and **Replay** User Navigation
  - Transparent Record (with Firefox)
  - Automated Replay (on the live site)

- Essential for GUI testing
- Very difficult to perform

- Methodology
- Tool
- Works with real sites of practical complexity
Record
Replay

Previously recorded

- Traces
- Trace Replayer
- Browser
- Target Web Application
Implementation (in a nutshell)

- **Record**
  - Inject Javascript code for intercepting all relevant user events

- **Replay**
  - **Locate the element** involved in the event
  - Execute the event with WebDriver library

- The element might:
  - Be in a different position
  - Have different attributes
  - No longer exist
Heuristics

- **findElementBySrc**
  - Retrieves the first element with the same tag name

- **findElementByInput**
  - Same type of form input and same value for certain attributes

- **findElementByGrid**
  - Same tag name and coordinates in a specified grid
It works...

- Correct replay
- Even after several days
- Ability to detect when replay is no longer possible

- Realistic complexity
  - Google Groups
  - Google Shopping, +1, Monclick
  - Twitter login, user search, respond to a tweet
  - Amazon search, share and send by email
  - ...

Thanks for your attention...