Considering People with Disabilities as Überusers for Eliciting Generalisable Coping Strategies on the Web

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Coping

The cognitive and behavioral efforts to manage demands that exceed the resources of a person.

Lazarus & Folkman, 1984

Problem

We do not know the coping strategies
employed on the Web

Why is this important

If we are able to automatically detect coping
we can provide the means to overcome the
situation

What do we propose

Transferring the identified strategies from populations who cope more **frequent** and **overtly** to general audiences

Why is it challenging

Coping occurs seldom

Once every 75 minutes.

Novick et al., 2007

112 minutes for sighted users

95 for visually impaired

Vigo and Harper, 2013

Why is it costly

Significant amount of observations
in the wild are required

What do we propose:

Step 1. Observation & Identification of Strategies

1. Observation

What do we propose:

Step 2. Implementation of algorithms to detect strategies

1. Observation → 2. Algorithms

What do we propose:

Step 3. Deployment in the wild

1. Observation → 2. Algorithms → 3. Deployment

What do we propose:

Step 4. Run user studies

1. Observation → 2. Algorithms → 3. Deployment → 4. User studies

What do we propose:

Refine algorithms

go to step 2

Case study

Step 1. Observation and analysis

- 2 independent studies/datasets generated from ethnographic studies and user tests
- 24 screen reader and screen magnifier users
- 17 coping strategies were identified

Case study

Step 2. Implementation

- *Retracing*: users retrace the steps in a sequence of pages.
- *Re-checking*: fast revisitations.

Case study

Step 3. Deployment

- Algorithms deployed in a Firefox add-on

The screenshot shows a Firefox browser window displaying the BBC News website. The browser's address bar shows the URL `www.bbc.co.uk/news/world-europe-22353398`. The page title is "BBC News - Willem-Alexander sworn in as king of the Netherlands". The BBC News website header is visible, with navigation links for News, Sport, Weather, iPlayer, TV, Radio, and More... The main content area features the headline "Willem-Alexander sworn in as king of the Netherlands" with a photograph of the royal couple. A Firefox add-on is active, displaying a dialog box with the following text:

No keystrokes or sensitive data are being collected.

BBC News - Willem-Alexander sworn in as king of the Netherlands [15:27:22]

(1) Are you trying to find something specific?

yes no

(2) Are you having any trouble with your search?

yes no

Justify or describe the above, please

submit and close

Case study

Step 4. User study

- 18 sighted participants, 10 days
- 126 *retraces* and 67 *rechecks*
- Tabbed browsing was interfering
- Feedback on false positives:
 - “*I’m browsing across tabs*”
 - “*I’m comparing different web pages*”
 - “*I’m navigating through different tabs*”

Case study

Refinement; then iterate.

Tab browsing breaks the interaction context

re-checking:

$\text{webpage}_i \rightarrow \underset{\text{NON-TABBED}}{\text{wp}_j} \rightarrow \underset{\text{NON-TABBED}}{\text{wp}_i} \rightarrow \underset{\text{NON-TABBED}}{\text{wp}_j}$

False positive rate (less is better)

- 2nd study: 20 sighted participants, 10 days
- 24 *retraces*, 16 *rechecks*

Retracing

Re-checking

Conclusion

There is an overlap between the coping strategies of different populations

Follow up

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Presentation DOI

<http://dx.doi.org/10.6084/m9.figshare.693741>

Source code

<https://bitbucket.org/mvigo/cope>

Datasets

<http://wel-data.cs.manchester.ac.uk/studies/3>