

Eye tracking and activity tracking analytics for software usability evaluation



Igor Tryhub, 275235
II UW r, 23.01.2018

Why even bother?

- Boringly unpleasant large dataset of numbers
- Traditional data visualizations do not fill all problematic holes
- How can we correctly understand data?
- How can we be sure that our research is valid?
- Usability test: “I wish we could see what he saw.”



Plans and Pricing

ENTERPRISE

14 day free trial, then

\$214 /month

BILLED ANNUALLY

OR ~~\$25~~ month-to-month

200,000
tested page views

[PURCHASE PLAN](#)

BEST FOR

Teams focused on Optimization
and Large Businesses

AND INCLUDES

Everything in Professional Plan

+

- 10 Up to 10 sites
- Experiment Scheduling
- Auto Stop Experiments
- Immediate Results
- Email Notifications
- Advanced Developer Support

PROFESSIONAL

14 day free trial, then

\$74 /month

BILLED ANNUALLY

OR ~~\$89~~ month-to-month

35,000
tested page views

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BEST FOR

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Small and Medium Companies

AND INCLUDES

Everything in Basic Plan

+

- 5 Up to 5 sites
- Multisite
- Greedy Algorithm
- Advanced Configuration
- Quota Control
- Priority Email

BASIC

14 day free trial, then

\$24 /month

BILLED ANNUALLY

OR ~~\$29~~ month-to-month

5,000
tested page views

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BEST FOR

Individuals and Personal Sites,
Bloggers, Small Stores

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These awesome features

- 1 1 site
- A/B Testing
- Heatmaps and Clickmaps
- Unlimited Experiments
- Cloud Tracking
- Unlimited Email Support

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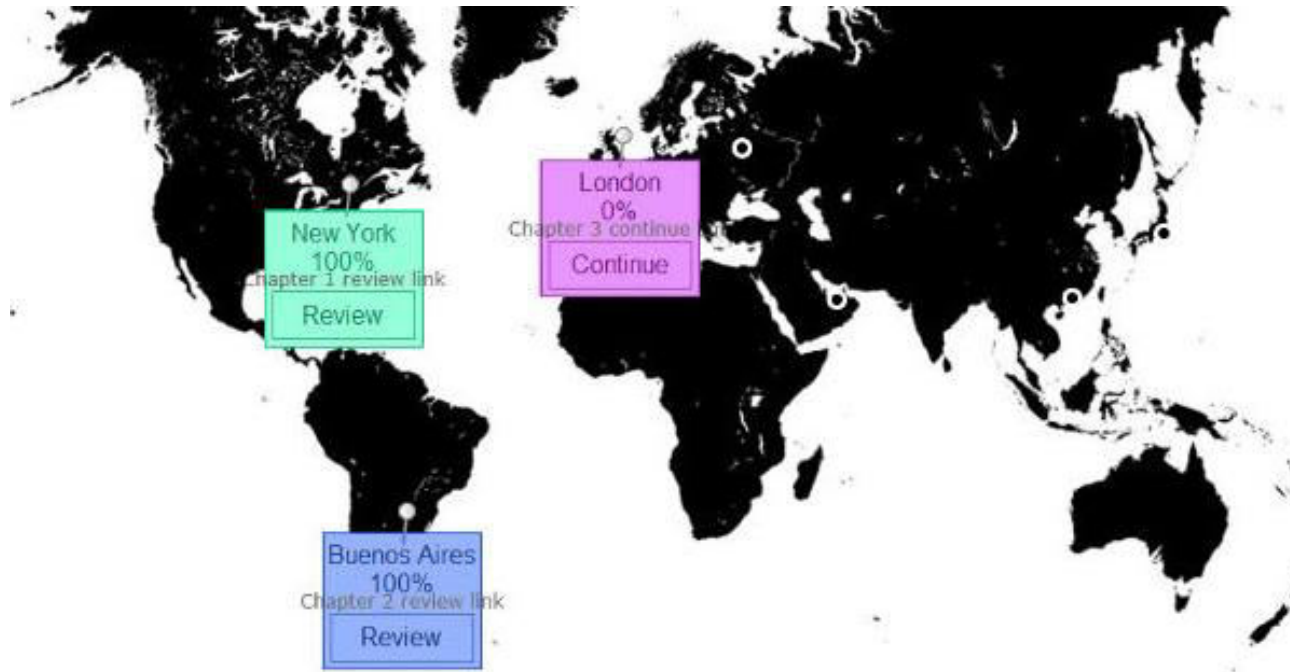
Case study #1

- Scalding hot button case study:
 - A heat map has shown interest, but it did not show that there was sheer confusion of users.



Case study #2

- 50% starting screen conversion rate due to unclicked “Review” button



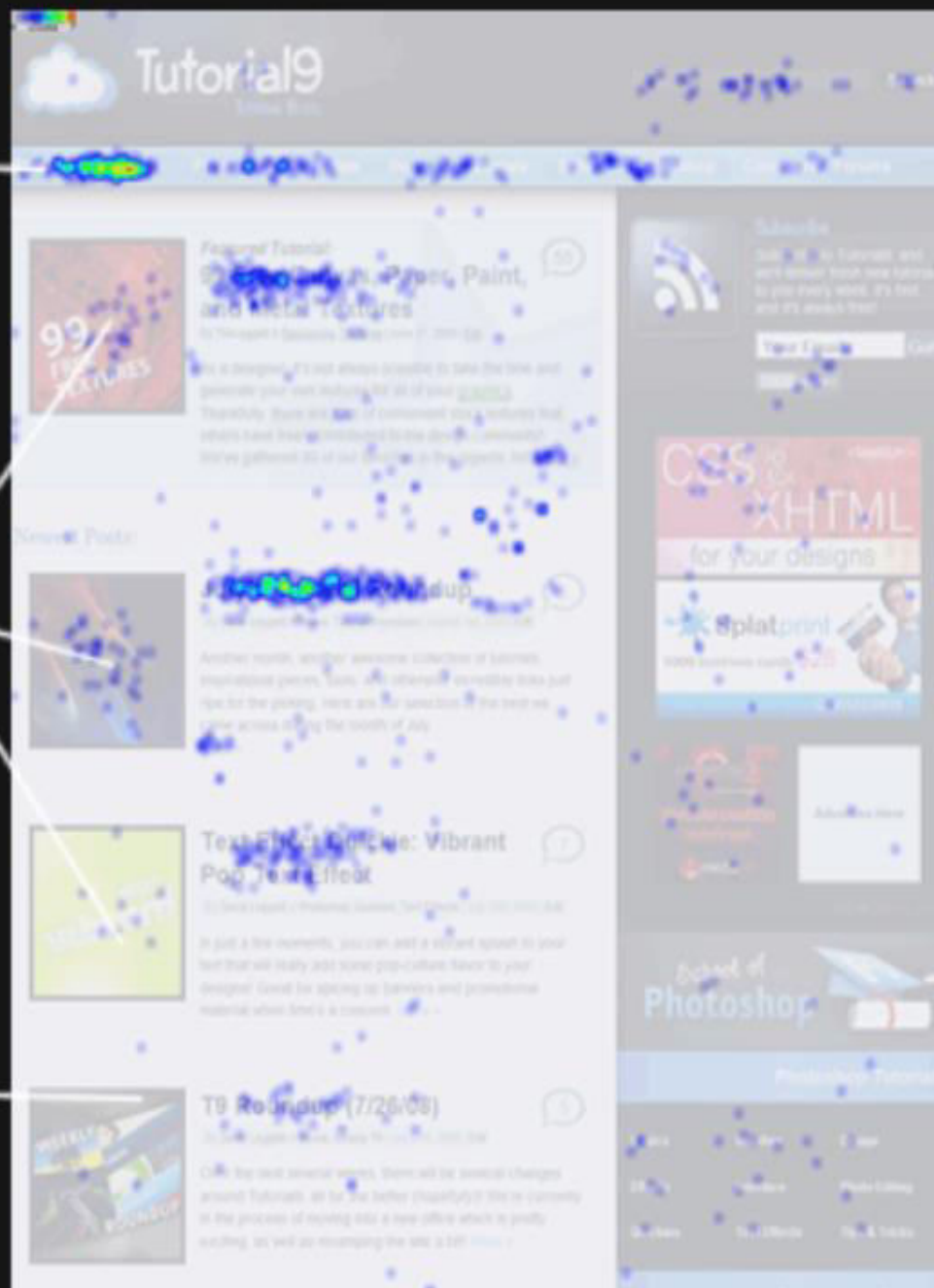
Heat maps

- Show the density of clicks in given areas
- Are NOT separate from the environment of the whole website or web app:
 - ‘Look at this, this button gets clicks! WE NEED MORE BUTTONS!’
- Useful for pointing you in the right direction, but are not enough to work on improving the UX

Spend More Time
On This Page

Thumbnails should
link to Article.

Interest Trails Off
after 3rd Listing
(Make entries Smaller
To get more above fold?)



No One Sees This.
Make more prominent.

This Is Useless.

Completed

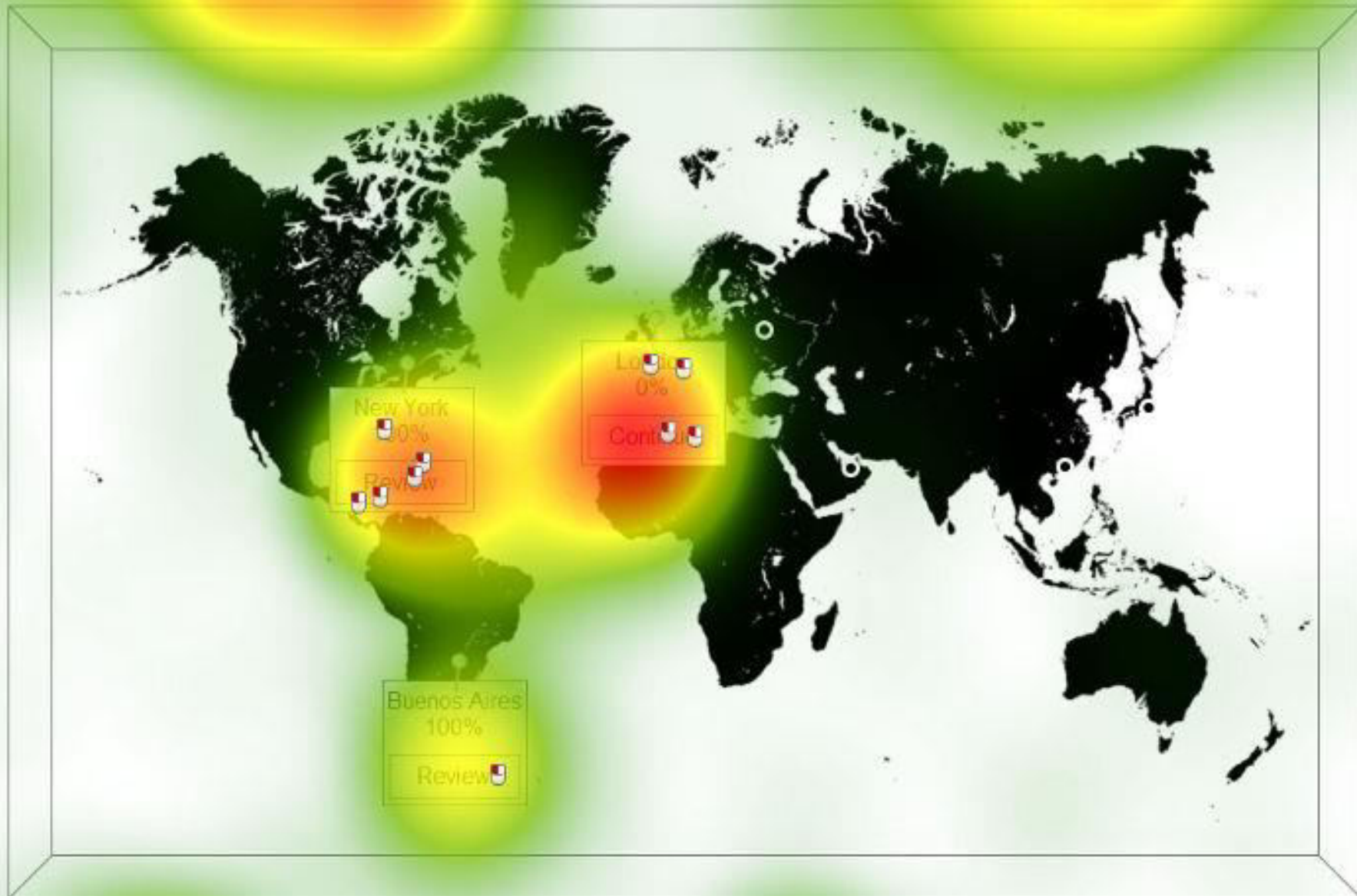
With no review →

POINTS

0

Review

Log out



Industry report

Leaderboard

Dashboard

Continue course →

POINTS

0

My Profile

Log out



New York

100%

Review

London

0%

Review

Buenos Aires

100%

Review

Industry Report

Leaderboard

Eye tracking: history

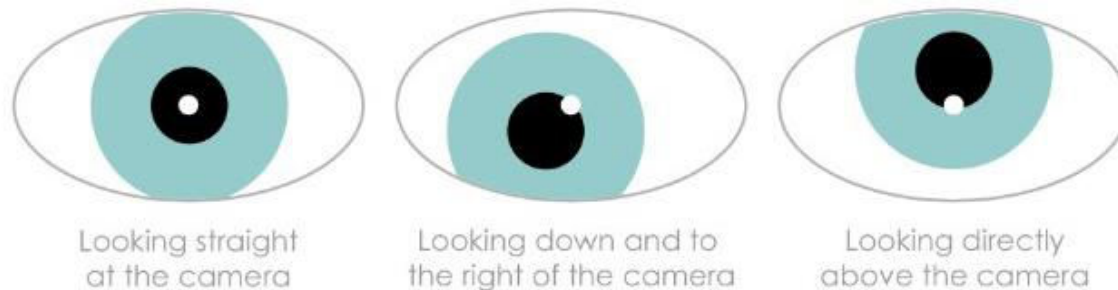
- 1980's: marketing groups began measure the effectiveness of ads in magazines.
- 1990: used on fans viewing of professional football games to determine what parts of the game the typical watcher missed.
- Late 1990s: organizations began to measure and study reactions to information on the WWW.
- 2001: Tobii Technology has been developing technology that both allows disabled users to control devices using only their eyes, and helps designers understand how users view websites.
- Today: widely used in the scientific community, marketing, and in usability studies.

Why it works

- Foveal vision vs. Peripheral vision
- The really high-resolution area covers only about 2 degrees of the visual field.
- Fixations and saccades.
- The Mind-Eye hypothesis: what people are looking at and what they are thinking about tends to be the same.

How it works

- Averages calculations for the two eyes.
- Bounce a beam of invisible infrared light off the user's face to identify position of the pupils without intense image recognition.



- Finds the intersection between the gaze direction and the plane of the computer monitor.
- Artificial intelligence to perform image recognition in a non-computer environment.

Exposed behavior

- An ordered list of fixations (and an unordered list of overlooked elements)
- The time taken to arrive at any given fixation
- The length of any given fixation
- The number of fixations per element

Eye tracking tools

- EyeTech
- Mirametrix
- SMI
- Tobii

Problems

- Cost (\$1,000-\$10,000)
- Limited Scope
- Behind every impressive demonstration is hours of effort and interpretation
- High Observer Effect (The Hawthorne effect)

The Hawthorne effect

- The experiments took place at Western Electric's factory at Hawthorne, a suburb of Chicago, in the late 1920s and early 1930s.





Mouse tracking

- It is cheaper
- It is a passive form of study – users have no idea they are being tracked
- Eyes cannot click – and a mouse does: deliberate click on an element is a form of showing interest
- Can be collected accurately, easily, remotely, and on a large scale, using Javascript

But how comparable are the methods?

- There is an 84% – 88% correlation between eye movement and mouse movement
- Recent paper from Google claims that eye movement is only 32% similar to mouse movement

Google study

- 32 participants
- It seems that the mouse does not become actively used until the user has moved past this first part of the page
- Discovered 3 patterns of active mouse usage:
 - following the eye vertically with the mouse (32%)
 - following the eye horizontally with the mouse (10%)
 - using the mouse to mark a promising result (16%)
- Some users use the mouse pointer to help them read the page, or to help them make a decision about where to click

Incidental mouse usage

Google Web Images Groups News Froogle Maps more
actress most oscar Search Advanced Search

Web Results 1 - 10 of about 1,400,000

Academy Awards® Oscars Winners

The **Most Oscar®** Nominations By Film™ ... and Great Directors Who Have Not Won Actor, Actress, ... Best Director Academy Awards®, The Worst Oscar Awards ...
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Most Actor/Actress Nominations

Here is a list of actors and actresses who have received the most Academy Award nominations. The list includes the nominated films and Oscar wins. ...
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The Oscar Trivia Quiz

For the answer to the most commonly asked Oscar trivia question, ... What is the only film to have three nominees for Best Supporting Actress? ...
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movies.about.com/od/oscartriaviquiz/ - 25k - [Cached](#) - [Similar pages](#)

Mouse following the eye horizontally

Oscar Trivia

The ~~act~~ with the ~~most~~ Academy Awards for "Best Actress" is Katharine Hepburn, ... The actor with the **most** total Oscar nominations is Jack Nicholson, ...

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Using the mouse to mark a promising result

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Mouse following the eye in the vertical direction

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lawn chair Search Advanced Search
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Web Results 1 - 10 of about 1

Lawn Chair
www.lawnchair.com - Huge selection of Beach Chairs in all Sizes and Styles. Low Prices.

Lawn Chair
www.target.com - Lawn chair Online. Shop Target.com

Lawn Chair
www.ebay.com - Whenever you're looking for you can get it on eBay.

Product Search results for **lawn chair**

Lawn Chair
Lawn Chair, Yoties, Hula Hoops, Set of 6 - \$39.99 - Sears
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Amazon.com: Outdoor Chairs / Lawn Chairs
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Backyard Larry
Backyard Larry says, "The eco-friendly Terra is a lawn chair that's out of your own lawn."
www.backyardlarry.com/0004/09/25/lawn_chair.html - 26k - Cached - Similar pages

Lawn Chair Larry Files!
Back home, Larry securely strapped the balloons to his sturdy **lawn chair**. He anchored the chair to the bumper of his jeep and inflated the balloons with the ...
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www.markbany.com
His real name was Larry, gave the **lawn chair** 16 20 years ago. ... 16 (UP) Larry Walters, the **lawn chair** pilot who catapulted to fame when balloons lifted ...
www.markbany.com/amazing/lawnchairman.html - 23k - Cached - Similar pages

www.backyardlarry.com
18 (UP) Larry Walters, the **lawn chair** pilot who catapulted to fame when balloons lifted ...
Walters ripped 42 weather balloons to an aluminum **lawn chair**, ...
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1982 Honorable Mention: Lawn Chair Larry
1982 Honorable Mention: **Lawn Chair Larry**: Larry Walters of Los Angeles is one of the few to contend for the Darwin Awards and live to tell about his ...
www.darwinawards.com/stunt/stunt1982-11.html - 16k - Cached - Similar pages

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www.lawnchair.com - Huge selection of Beach Chairs in all Sizes and Styles. Low Prices.

Lawn Chair
www.target.com - Lawn chair Online. Shop Target.com

Lawn Chair
www.ebay.com - Whenever you're looking for you can get it on eBay.

Product Search results for **lawn chair**

Lawn Chair
Lawn Chair, Yoties, Hula Hoops, Set of 6 - \$39.99 - Sears
Set of 2 Lawn Chair, Yoties, Hula Hoops - \$59.98 - Target

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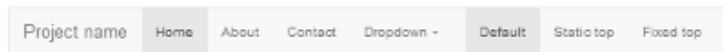
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Session Recording

- Swipes
- Clicks
- Movements
- Highlights
- Interactions
- Browsing paths

A/B testing



Welcome to our website

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Click rate: 52 %



Welcome to our website

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72 %

Session recording tools

- ClickTale – an enterprise option for recording sessions:
 - Expansive, large, advanced. The only con is pricing.
- VWO – an A/B testing software that also offers session recording for variants.
- UsabilityTools – capable of reproducing the user screen and actions in one hundred percent faithfulness:
 - Offers a free trial for two weeks and has a cheap monthly subscription.

Bibliograpy

- <https://usabilitygeek.com/>
- <http://www.uxbooth.com/articles/a-brief-history-of-eye-tracking/>
- <https://www.tobiipro.com/>
- <https://www.clicktale.com/>
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