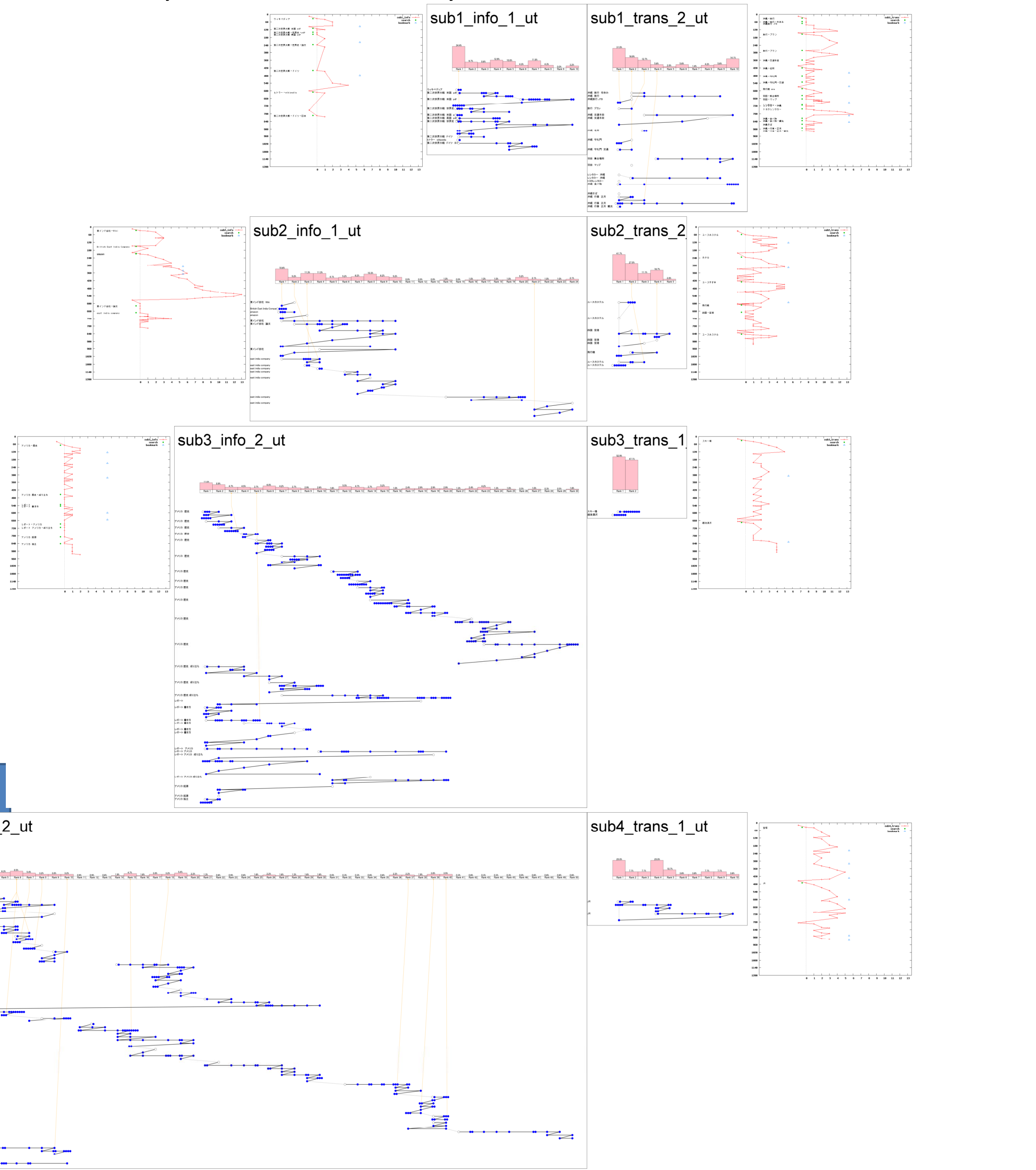
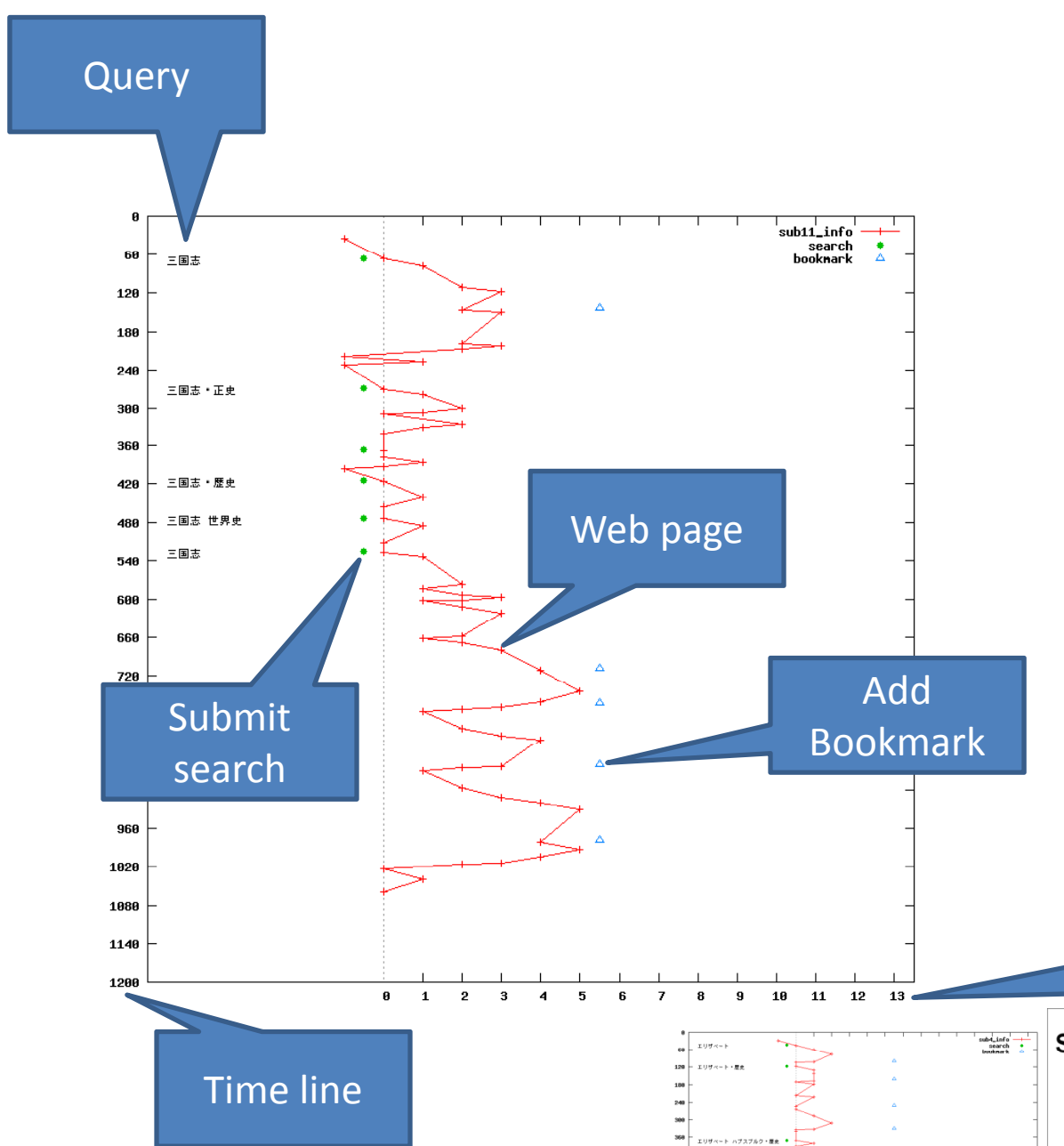
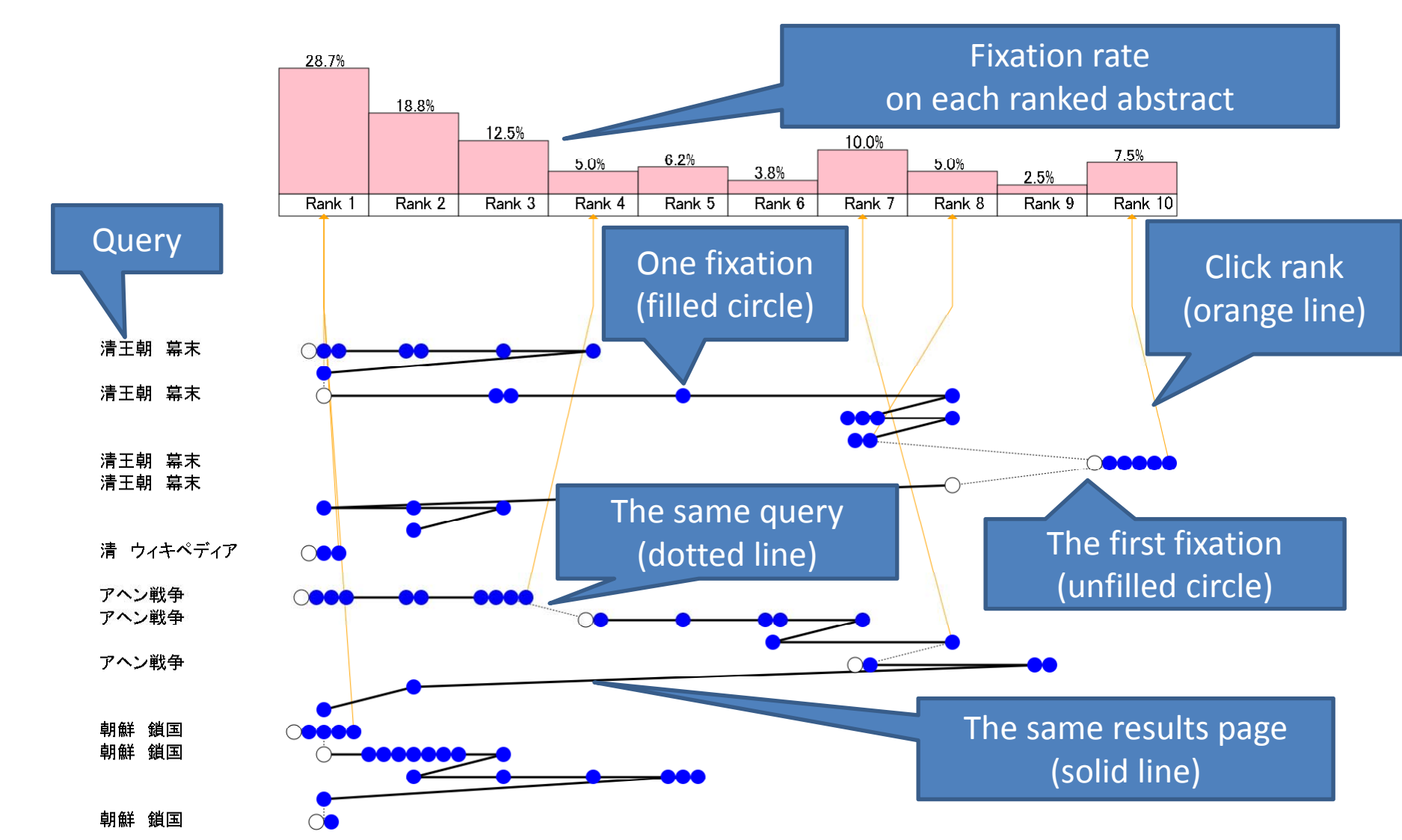


Visualization of User Eye Movements for Search Results Pages

Yuka Egusa, Masao Takaku, Hitomi Saito, Hitoshi Terai, Noriko Kando, Makiko Miwa

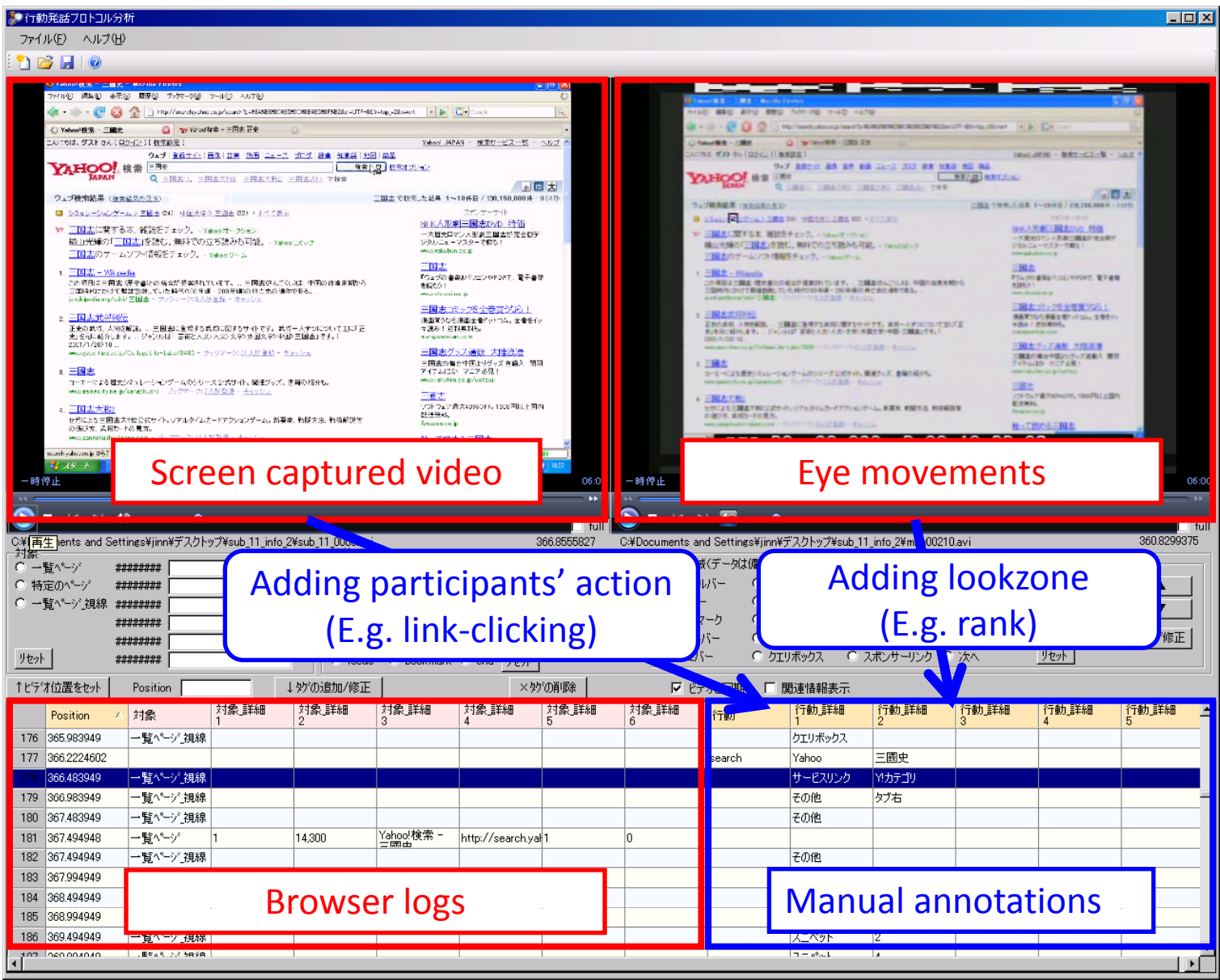
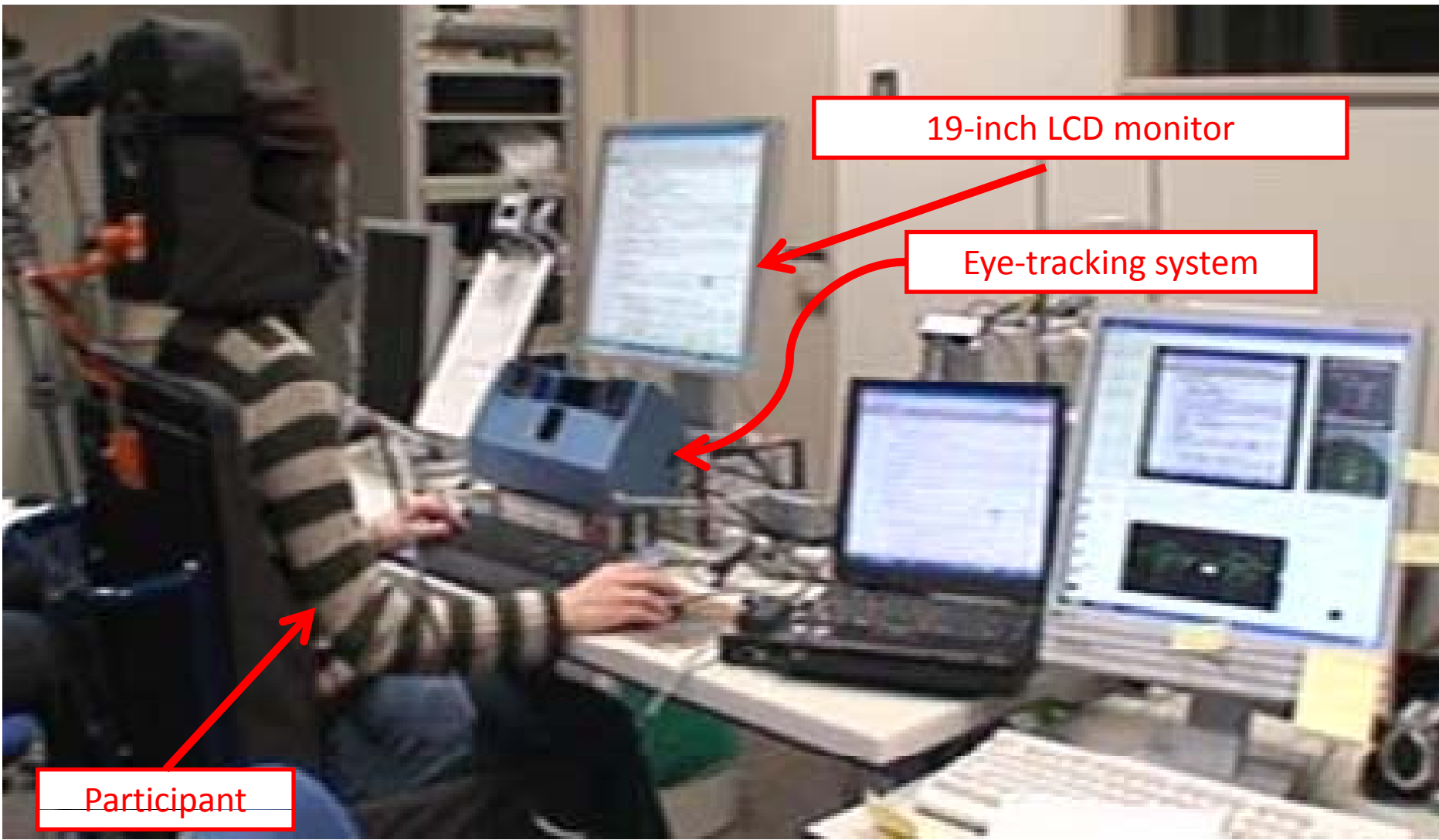
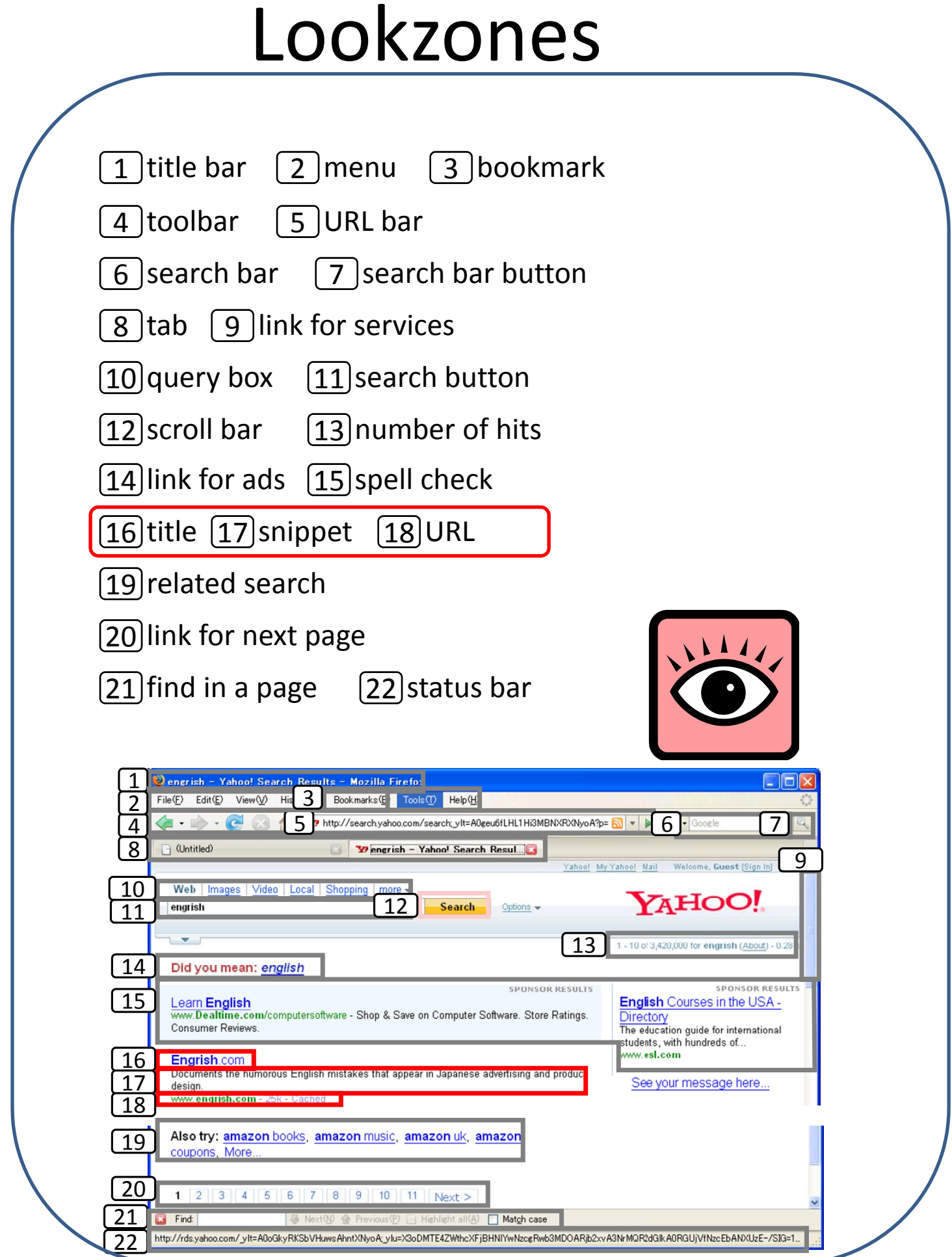
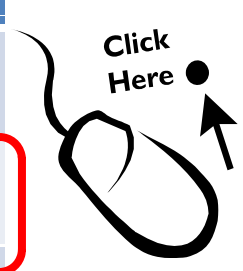
- Visualization techniques for the user behavior using search engine results pages.
- Our visualization method provides an overview of a user's actual visual behavior
 - using the logs for eye movement data
 - and browser link-clicking, link-rank and link-depth.
- Background goals
 - Understanding users' search process as a cognitive model
 - Supporting users' exploratory search behavior on the Web



- Participants:
 - Eleven undergraduate students
 - Five graduate students
- Tasks:
 - Report writing task
 - Trip planning task
- The participants had 15 minutes to each task.

Please refer to Terai et al. [10] for more details on the experiment.
[10] H. Terai, H. Saito, Y. Egusa, M. Takaku, M. Miwa, and N. Kando. Differences between informational and transactional tasks in information seeking on the web. In *IIIX '08: Proceedings of the second international symposium on information interaction in context*, pages 152–159, New York, NY, USA, 2008. ACM.

Categories of action	
Search	searching with a search engine
Link	clicking on a page link
Next	going forward to the next page
Back	going backward to the last page
Jump	jumping to a particular page in bookmark
Browse	browsing next search results
Submit	clicking a submit button
Bookmark	adding bookmarks
Change	changing from one tab to another
Close	closing a tab or window



2-1-1-link->(1) wikipedia
1-1-1-1-link->(1) The French Revolution
2-2-3-3-3-3-4-3-link->(4) The French Revolution
5-6-7-6-6-8-8-8-8-8-9-10-10-9-10 The French Revolution
13-11-12-11-11-11-11-11-12 The French Revolution
1-link->(1) Tokyo Institute of Technology
2-1-1 Thinking about the French Revolution
1-1-1-2-link->(1) Thinking about the French Revolution
1-1 Thinking about the French Revolution
1-1-2-2-1-1-2-1-1-1-1-1-3-3-3-3-1-3-3-link Literature source of the French Revolution
4-5-5-6-6-6-6-link->(6) Literature source of the French Revolution
4 Literature source of the French Revolution
4-1 Literature source of the French Revolution
1-1 An introduction to the French Revolution
1-1-1-1-1-1-2-2-3 An introduction to the French Revolution
2-1-1-1-1-1-2-3-3-3-3-3-4-3-link->(3) An introduction to the French Revolution Kobayashi Yoshiaki
1-3-3-1-3-5-5-5-5-5-5-4-3-1-2-link->(1) An introduction to the French Revolution Kobayashi Yoshiaki
3-4-6-4-4-4-4-5-6-7-8-8-6-4-3-2-1-1-1-1-4-4-4-4-4 An introduction to the French Revolution Kobayashi Yoshiaki

- Data from a user experiment
 - Eye movement data
 - Browser link-clicking
- Visualization for Web seeking
 - Understand user's behavior on the search results page during a overall search task.
 - Compare behaviors among different tasks and different users.

