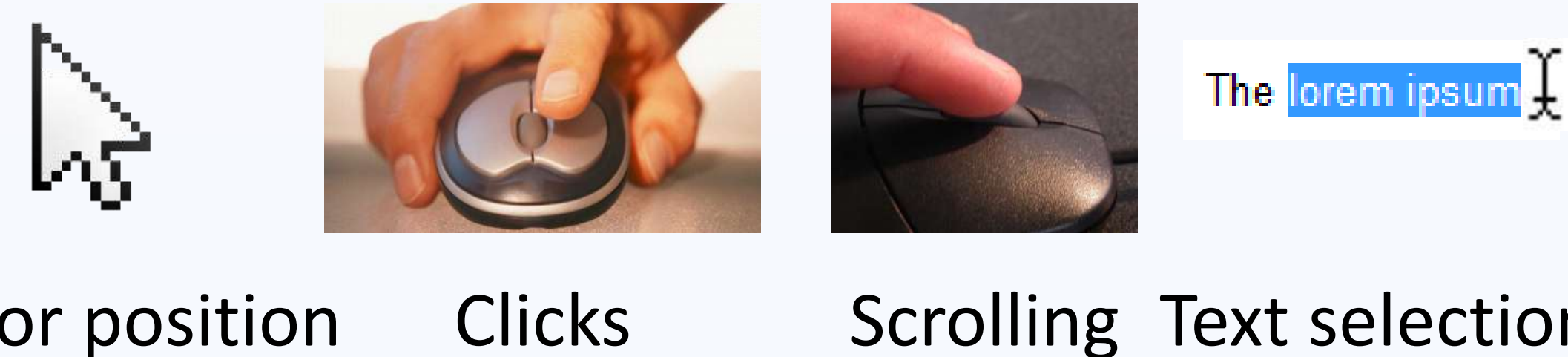# Large-Scale Analysis of Individual and Task Differences in Search Result Page Examination Strategies

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1. Understanding how Web searchers interact with search results
→ more detailed signals than just clicks
→ more scalable method than gaze tracking

2. Log cursor positions and user interactions on the search results page in detail

Cursor position   Clicks   Scrolling   Text selection

3. Automatic clustering by user
→ 22k users w/ > 20 queries ; > 80 features for each query

4. User cluster descriptions
→ Cursor heat maps for user clusters based on non-navigational tasks

Economic
- 75% of users
- Little time on SERP
- Focused, fast mouse movements
- Click quickly
- <1 result click per query on avg

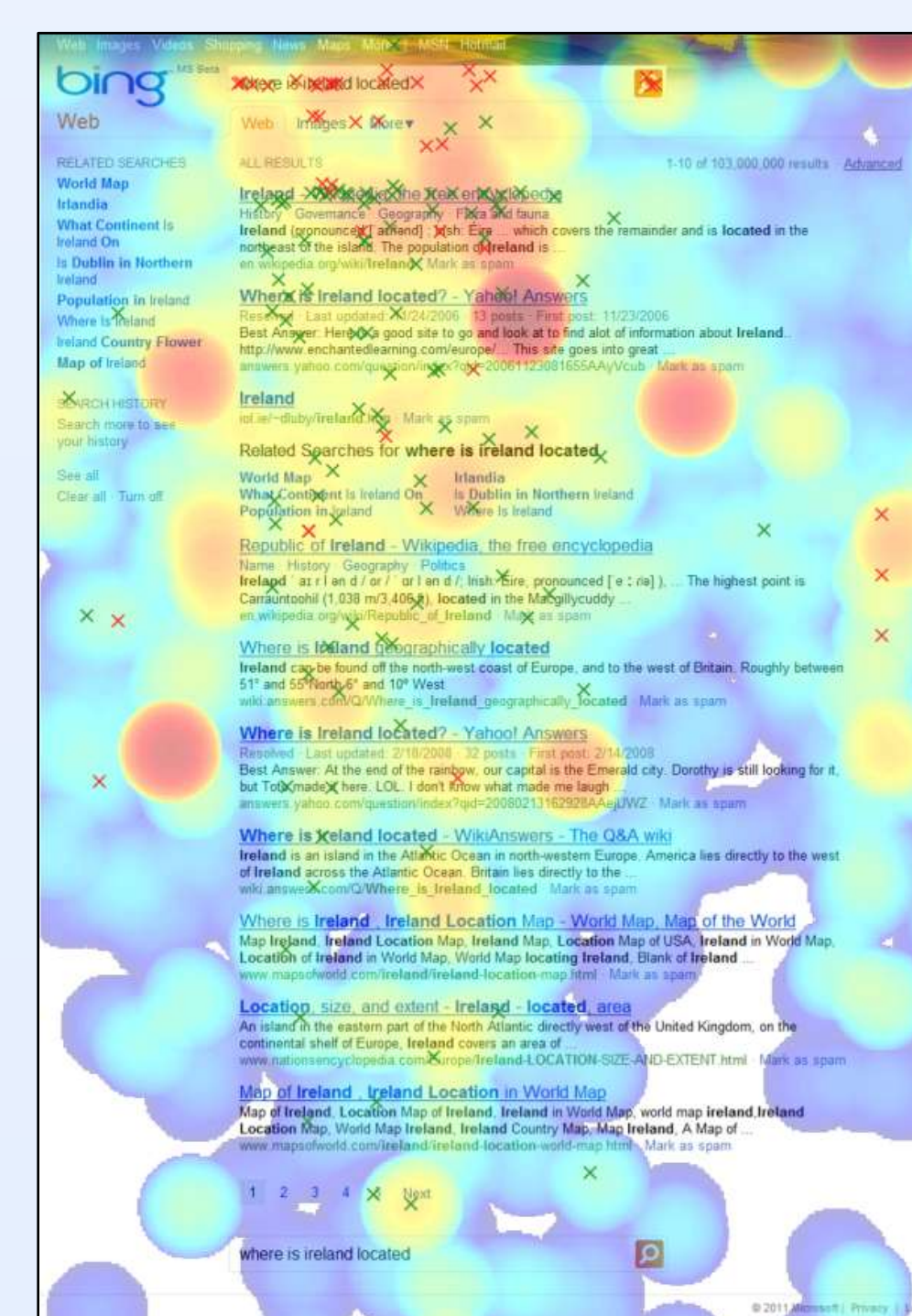**Exhaustive-Active**
- 16% of users
- Thoroughly examine SERP
- Little cursor idle time
- Click a lot
- Abandon rarely

Exhaustive-Passive
- 9% of users
- Spend longest time on SERP
- Cursor often idle for a long time
- Click a lot
- Abandon often

Descriptive Features for User Clusters (Non-Navigational Tasks)

	Cluster	Exhaustive-Passive	Exhaustive-Active	Economic
	Number of Users	232	408	1905
	Feature			
Time		Long time on SERP		Short time on SERP
	TrailTime	446.00	156.14	28.03
Clicks		Many R clicks		Few R clicks
	HyperlinkResultClickCount	1.10	1.30	0.85
		Many NH clicks		Few NH clicks
	NonHyperlinkClickCount	0.70	0.85	0.40
			Late first R click	Early first R click
	TimeToFirstResultClick	88.74	144.56	21.05
			Less abandons	More abandons
	NoClick	0.17	0.13	0.20
Re-Query		More search box		Less search box
	ClickInSearchBox	0.08	0.06	0.04
Scrolling		More scrolls		Less scrolls
	Scroll	0.19	0.21	0.13
Cursor		More hover results		Less hover results
	FractionTopTenHovered	0.28	0.29	0.22
		Slow mouse move		Fast mouse move
	TrailSpeed	130.70	118.31	209.11
		Short mouse move		Long mouse move
	MedianMouseMovementDistance	83.75	80.34	94.79
		More reading w/ mouse		Less reading w/ mouse
	Reading	0.05	0.05	0.04
		More cursor idle		Less cursor idle
	Cursor Idle	34.40	9.68	2.21

Task Differences

	Feature	Task Type	
		Nav.	Non-nav.
	TrailTime (secs)	49.59	62.93
Clicks	HyperlinkResultClickCount	0.91	1.02
	NonHyperlinkClickCount	0.49	0.57
	TimetoFirstResultClick (secs)	21.24	29.31
	NoClick	0.13	0.16
	ClickInSearchBox	0.11	0.16
	Scroll	0.12	0.17
Cursor	FractionTopTenHovered	0.19	0.22
	TrailSpeed (px/second)	180.21	167.43
	MovementDistance (px/move)	80.92	82.94
	Reading	0.04	0.05
	Cursor Idle (secs)	4.31	3.74

Implications

- Improved click prediction
- Improved search result ranking
- Tailored search experiences

Make it efficient!   Show as much info as possible!   Make it entertaining?