Economics of Web-Design

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A camel is a horse designed by a committee

Vogue'1958

Less is more

1855, Robert Browning (English poet)

Outline

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Anti-AdWords Theorem

Problem Statement

Given 10 organic search results

and 5 sponsored results

place them on 15 slots on a webpage

Math model (1/2)

Every link i:

Price p_i

Relevance r_i

Attractiveness a_i

Every slot j:

Attention share s_j

Math Model (2/2)

Matching M:

Place every link i to slot $j = M(i)$

User clicks on link i
with probability proportional to
$s_{M(i)} + a_i$

Payoffs

Expected relevance:

$$Rel(M) = \sum_{i=1}^{15} (s_{M(i)} + a_i) \cdot r_i$$

Expected revenue:

$$Rev(M) = \sum_{i=1}^{15} (s_{M(i)} + a_i) \cdot p_i$$

Attractiveness is not important

Pareto-Optimal Matching

M is Pareto-Optimal iff there is no M' such that

$$Rel(M) < Rel(M'), \quad Rev(M) < Rev(M')$$

Otherwise M is stupid

Example (1/2)

Attention	Link	Relevance	Price
50%	O1	2	-
40%	A1	0	25$
10%	A2	1	20$
		1.1	12$

Example (2/2)

Attention	Link	Relevance	Price
50%	A2	1	20$
40%	O1	2	-
10%	A1	0	25$
		1.3	12.5$

Anti-AdWords

Left — organic, right — advertising

Under presented model AdWords design can be stupid

That is, another presentation can improve **both** relevance and revenue

Notation

Page attention structure $\mathcal{P}$:

20% 18% 15% . . . 4% 2%

Fixed design $\mathcal{D}$:
Ad slots, organic slots

20% 18% 15% . . . 4% 2%

Anti-AdWords Theorem

$\forall \mathcal{P} \quad \forall^* \mathcal{D}$
$\exists$ links $\mathcal{L}$ such that
any matching $M \in \mathcal{D}$
is stupid for $\mathcal{L}$

Alternative to AdWords

Single list for sponsored and organic results

Tradeoff ranking

Further questions

Do we need to keep 10 Organic guarantee?

Adwords redundancy?

Quantify possible Adwords inprovements

Find all rankings on a trade-off curve

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Dynamic Design

Increase Key Numbers

- Owners utility
- User utility

Key Numbers for Owner

- Ad revenue
- Number of users
- Volume of content
- Amount of feedback
- User time online
- Brand recognition

Key Numbers for User

- # of matches (dating)
- # of job offers
- # of answers (QA)
- # interesting stories (news)
- # of compliments (social networks)

Design
=
tool for increasing
key numbers

Main Challenge

Quantify Design

Design Decisions

- What to display
- With what priorities?

Quantify Internal Priorities

Attention budgets and auctions

Dynamic Design

Choices based on opportunity (user, action, time) knowledge

Design Mechanisms

- Chosen by owner
- Fresh
- User voted
- Random
- Personalized
- Paid

Minimalism?

- Design complexity = # of links
- Links with CTR < .001 are worse than ads
- One random big instead many static small

Links to kill

- Amazon: “Add to wedding registry”
- Google: “Report yourself”
- Yahoo: “Horoscopes”

Django MTV Tricks

- Template inheritance
- If/for loops in templates
- Exceptions

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Hit Counter Project Proposal

Hit Analysis

- Easy: incoming hits
- Hard: outgoing hits

Outgoing Hits

- Ajax solution

  Can be blocked
- Inverted index

  Internal hits only
- Goto

  Bad for SEO

Call for Feedback

- Volunteers for hit counter project?

Links

http://yury.name
Homepage

http://yury.name/newweb.html
Tutorial “The New Web”

http://yury.name/reputation.html
Tutorial “Reputation Systems”

Thanks for your attention!
Questions?