



Keyword Portfolio Optimization for Pay-per-Click Search Engine Marketing

SPOT - SearchIgnite Portfolio Optimization Technology

Executive Summary

A Proprietary Technology of SearchIgnite

Pay-per-Click search engine advertising (“Paid Search”) has experienced explosive growth in recent years. Paid Search is the contextually relevant advertisements that appear on search query results pages of search engines such as Google, Yahoo, MSN, Ask Jeeves, and AOL, and has proved to be enormously successful for the following reasons:

1. Paid Search advertisements are relevant to customer interests
2. Advertisements are delivered to customers at the moment they express in the subject matter
3. Real-time auction media buying allows the advertiser to control the cost they are willing to pay for a visit to their web site
4. Performance based advertising model empowers the advertiser to only pay if someone responds to (clicks on) their advertisement
5. The flexibility of Paid Search allows campaigns to be turned on, turned off, or adjusted in real time at any time

Coupling the flexibility and measurability of search engine marketing, marketers are investing much more of their overall advertising budget in Paid Search. As a result, advertisers invest time and effort in developing more keywords, each with its own bid and response metric, and must manage them across an increasing number of search engines. The complexities of managing hundreds, if not thousands, of keywords across multiple engines has made it very challenging for most marketers to manage large search campaigns. Even sophisticated marketers who manage print, online and broadcast media for multiple products, are still getting familiar with the complexities and differences of search marketing as compared with other legacy media mediums.

SearchIgnite

SearchIgnite is a web-based software platform that enables paid search marketers to easily manage all aspects of their paid search campaigns in one convenient location. SearchIgnite’s suite of software includes industry-leading keyword development, bid optimization, and reporting and analytic capabilities.

SPOT Portfolio Optimizer, by SearchIgnite

SPOT (“SearchIgnite Portfolio Optimization Technology”) is a powerful addition to SearchIgnite, taking much of the complexity out of managing large search marketing campaigns and helping marketers optimize the performance of their paid search campaigns against customized business goals. SearchIgnite’s proprietary algorithms optimize keyword bids across multiple search engines, allowing different campaigns to each have its own optimization settings. Campaign managers using SPOT are freed from continually monitoring the intraday or daily fluctuations of the marketplace and allowed to focus on the more value added analysis and management functions such as website effectiveness, ad copy and keyword research.

Using SPOT, marketers can optimize against four different business goals:

1. Clicks – maximizes the number of clicks for your target budget
2. Customer Acquisitions (or Customer Conversions) – maximizes the number of customer acquisitions (or conversions) for your targeted budget
3. Net Revenue –maximizes the net revenue (Revenue - Cost) for your targeted budget
4. Profit –maximizes the Profit (Revenue * Net Profit Percentage – Cost)

Underlying Technology

SearchIgnite's expanded technology uses advanced mathematical algorithms to predict profitability scenarios, then determines the ideal bid/rank combination for each keyword and automatically places the bids on those keywords. SPOT scans the competitive environment and its relationship to a campaign's keyword data history multiple times per day and automatically adjusts the individual keywords within a campaign to the user's defined objectives and budgets. SPOT's prediction and optimization engine is driven by nonlinear statistical modeling and other advanced mathematical techniques to find the optimal bid for each keyword across multiple search engines. SearchIgnite dynamically allocates a client's budget across their portfolios of keywords based on business goals. SPOT's technology then closely monitors click-through and conversion rates, adjusting results consistently based on real-time findings.

Four prediction modules are used to predict impressions, click-through rate, revenue, and bid amount for each possible bid position for each keyword. The optimization module then uses genetic algorithms to find the optimal bids for each keyword. For a typical campaign containing 1,500 keywords across Google and Yahoo, SPOT develops more than 8,000 individual Keyword/Rank predictions utilizing fully contemporaneous data and intelligently searches through more than 30 trillion portfolio combinations.

Conclusion

SPOT is a very powerful, industry-leading technology to help marketers or their agencies achieve superior results using paid search marketing. Used within the SearchIgnite Search Management System, it can optimize multiple campaigns using different settings. SPOT is completely transparent regarding how it adjusts bids for keywords, and keywords can be added or removed from an optimized campaign at any time.

For large, complex paid search campaigns, it is virtually impossible to achieve optimum results and exploit the inherent inefficiencies of the paid search marketplace without employing advanced portfolio prediction and optimization algorithms. SPOT allows marketers, or their agencies, to focus on campaign strategy.

A successful implementation of SPOT is described in the attached Case Study.

Case Study #1: PPC Campaign for a Major Metropolitan Newspaper's Auto Classifieds Increases Daily Revenue by 43%

A major metropolitan newspaper's Web site ran a search campaign directed toward the auto classifieds section to reach visitors interested in selling or purchasing new or used vehicles. The campaign was targeted nationally on Google and Yahoo Search engines with region-specific keywords relevant to selling and buying a vehicle (e.g., "buy a car in Seattle"). By utilizing the geographic targeting on Google for broad keywords, the campaign qualified visitors to the site that entered search queries without a local indicator (e.g., "buy a car"). Within the auto classifieds section, the visitor was presented with multiple options that were considered primary actions (e.g., "locate a dealer", "search for cars", "and post a car for sale"). Secondary actions were defined as searches on other portions of newspaper's site such as job and real estate classifieds, as this campaign was a portion of a larger marketing effort to drive more visibility to the newspaper's online services.

The campaign was launched about one year prior to being optimized by SPOT ("SearchIgnite Portfolio Optimization Technology"), and consists of 1,651 keywords. Prior to the application of SPOT, the bidding strategy was structured around maintaining effective positioning for these keywords at a maximum overall cost per click of \$0.70. The focus was put on broad, high-volume terms that drove 80% of the traffic to the auto classifieds vertical, such as "buy a used car." Long tail keywords like "buy a used BMW in Seattle" generated significantly less volume to the site and therefore received less specific attention.

SearchIgnite worked with the client to implement a more specific revenue structure and optimization strategy for the campaign. The primary auto-specific actions were assigned a value based on the perceived value to the newspaper. Search and located actions were valued at \$1.00/action, and posting a car for sale was given the value of \$58.62. Secondary actions were defined and valued at \$0.50/action such as searches of job and real estate classifieds. Finally a base click value of \$0.15/click was ascribed to visitors to the site. Given the defined revenue structure of the campaign, SPOT's goal for this campaign was to maximize the net revenue (revenue – PPC cost) of the campaign.

A baseline performance of the campaign was established by examining the three weeks immediately preceding the implementation of SPOT. The following table (Table 1) shows the relevant daily statistics for the campaign. The baseline analysis revealed that the campaign, according to the revenue structure defined above, was unprofitable on a net revenue basis. On average the campaign had a return on advertising spend (ROAS) of -23%.

Campaign Optimization Analysis

To correct this deficiency, SPOT was implemented on the campaign beginning on August 24, 2005. The results of the campaign over the first month of optimization are shown on the following table. Highlights of the optimization include:

1. Net Revenue for the campaign transitioned from a net loss to profitability. The ROAS jumped from -23% to 15%.
2. CPA declined by nearly 40%.
3. Daily revenue from the campaign jumped by more than 43%.
4. All of these gains were accomplished while the daily budget declined by 4% (closer to the daily targeted budget) and CPC declined by 26%.

A graphical look at the results of SPOT that shows impressions, clicks, and revenue is provided on the next page.

Campaign Metric	Change Under Optimization
Impressions	45.3%
Clicks	29.7%
Customer Actions	54.3%
Conversion %	19.0%
Revenue	43.7%
PPC Cost	-4.1%
CPC	-26.0%
CPA	-37.8%

Table 1. Performance Improvements after optimization

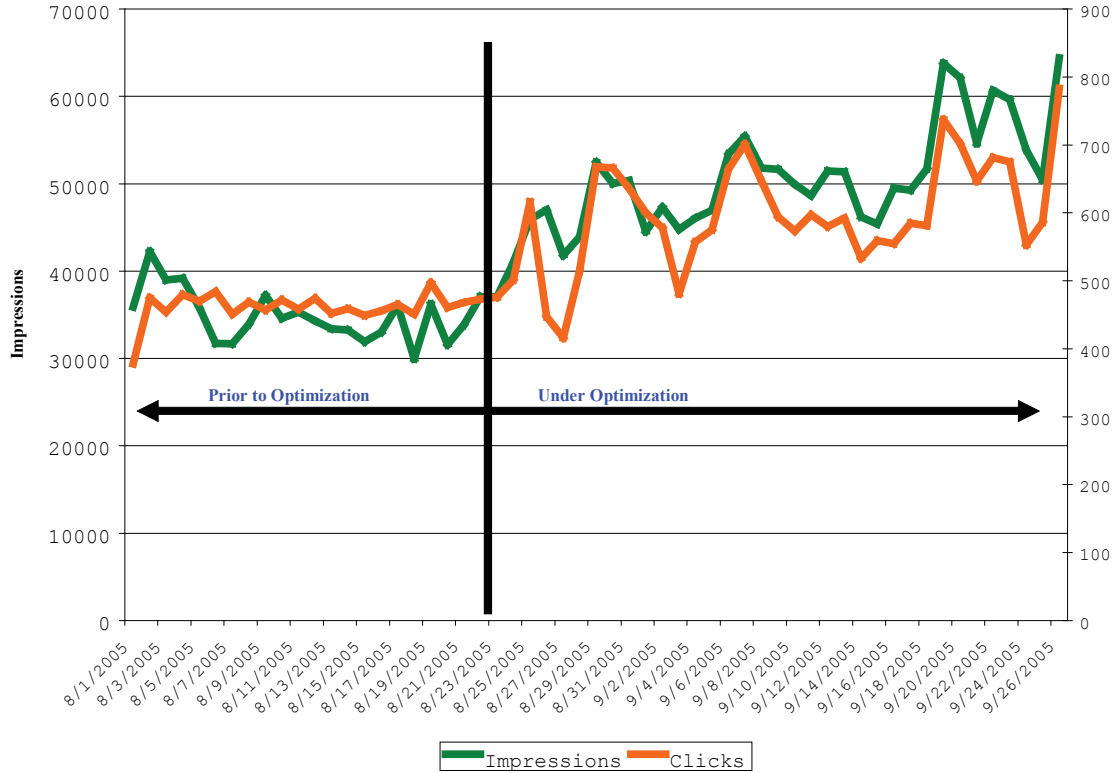


Chart 1. Daily Impression and Click History for Campaign Prior to and Under Optimization

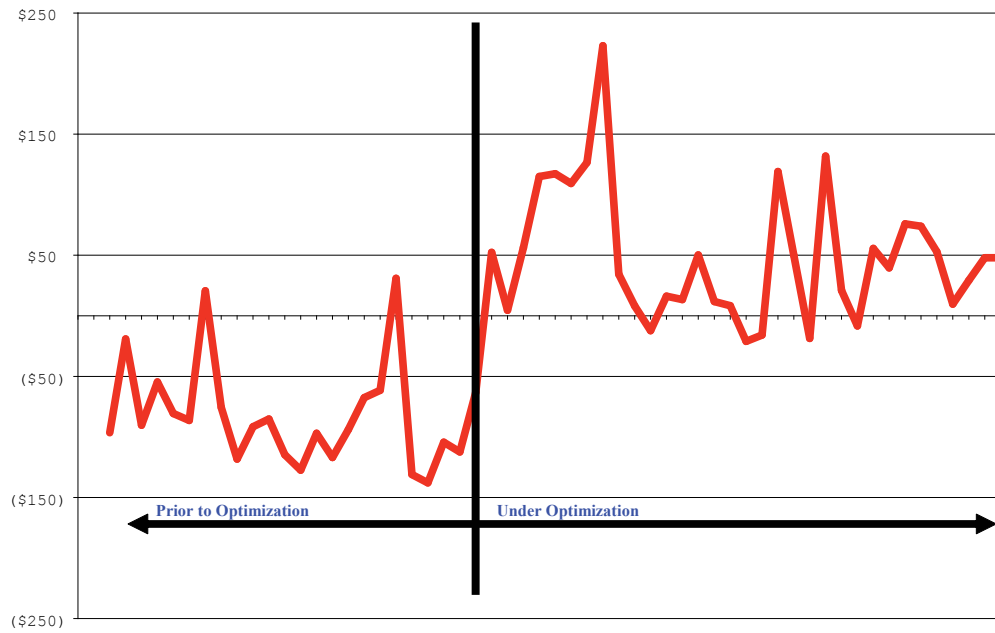


Chart 2. Campaign profitability after optimization.

While all of these gains are substantial, it is interesting to examine how SPOT achieved these gains. Prior to the optimization, SPOT's system had already calculated 37 separate subcampaigns as a part of its continual off-line calculations. These subcampaigns each displayed different response-rate behavior for changes in PPC rank. Upon initial optimization the model also calculated a wide range of keyword-level conversion and revenue structures. By matching a bid structure of a keyword to its corresponding subcampaign and revenue behavior the model was able to find significant efficiencies that remained hidden from casual review of the data.

An example is the Google geo-targeted terms "used Volvo" and "used Nissan." Prior to implementation nearly all of the brand specific terms paired with the word "used" ("used Ford", "used Chrysler", etc) had a constant bid of \$0.85. The model determined that the response-rate curves and revenue structure of these brand-specific keywords were drastically different from each other. As a result the true value of "used Volvo" is significantly different than that of "used Nissan" (in this case, "used Volvo" was valued at \$1.40 and "used Nissan" was valued \$0.57). Therefore, when the model was implemented in the marketplace, each brand-specific term was evaluated against its bid structure to determine the best overall portfolio of bids to reach the specific goal of maximizing net revenue. The initial implementation of the model instituted bid changes on nearly 80% of the keywords, with 75% of the changes being increases in the bid and 25% being reductions in the bid. The net effect of the changes was to emphasize the more "tail terms" (which had steeper response rate, and impression curves) and decrease the "broad terms" (which had significantly lower conversion and revenue structures).

Over time, SPOT consistently checked the magnitude-to-efficiency relationship of each keyword as well as adjusting its prediction algorithms. On average, each day (three update cycles) approximately 35% of the keywords were adjusted as the model observed changes to the prediction algorithm or competitive marketplace. This resulted in the model becoming more effective over time and lowering the average CPC by more than \$0.02 over the course of the campaign.



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