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## UNDERSTANDING THE GENOME PROVIDES NEW DNA FOR INTERNET ADVERTISING PLATFORMS

Context-based Approaches Will Be Supplanted by Concept-based Targeting, says  
NetSeer CEO, and Here's How

SANTA CLARA, CA - DECEMBER 10, 2009 - Despite the tremendous success and clear technological achievements of context-based Internet advertising platforms, Internet advertising can become far more effective than it already is, believes John Mracek, recently-named CEO of Silicon Valley's NetSeer. And the answer lies, he says, in leading-edge technologies that are being used to understand cell metabolism, and the human genome.

Mracek, who joined the advertising technology startup in late July, sees today's context-based ad targeting as just the first step in a process that will lead, ultimately, to understanding a user's true *intent* for accessing information on the Web. If you understand that intent in the proper conceptual framework, he argues, you ideally can serve up "the perfect ad" each and every time - a Holy Grail in the world of advertising - without infringing on the user's privacy with controversial techniques such as behavioral targeting. This is called "concept-based" advertising.

"Advertising effectiveness is directly related to the relevance of an ad to the user at the precise moment he or she sees it," explains Mracek, "and therefore relevance is all about determining the user's interests *at that moment*. But this is easier said than done. Current techniques, such as content targeting, behavioral targeting, and remarketing, are not sufficient."

But how do you understand the user's interests or intent in real time? This is where Mracek, and a team of scientists at NetSeer, have turned to some recent, breakthrough techniques for understanding the metabolic processes in living cells, for answers.

"Researchers have tried for years to understand the mutual role of cell proteins and DNA in triggering and regulating cell processes - and most advances have been made through tedious and painstaking bottom up research," explains Mracek. A top-down, high-throughput, large scale analytical technique was only a dream.

But, according to Mracek, UCLA professor Vwani P. Roychowdhury, with several of his graduate students, discovered a top-down analytical framework that could effectively partition hundreds - even thousands - of cell protein interactions into high-level, functional groups *with absolutely no need to know what the groups actually did*. "This was quite a breakthrough," he says.

And it turns out it has a parallel in the real-time targeting of ads to Internet users. Mracek explains:

"Serving up ads based upon a user's keyword search entries has been successful because the user himself codifies his intent. But what do you do where there is no search? How can you monetize the white space on literally hundreds of millions of pages that are viewed each day, without knowing the conceptual framework that brought that user to that page at that moment? That's the challenge," says Mracek.

But it turns out that the answer is on the page - if you could understand what it is actually about - or, more precisely, what *concepts* are actually there.

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“It’s easy for us to glance at a Web page, and determine in a heartbeat that it is all about, say, fishing for smallmouth bass,” says Mracek. “But for traditional targeting software, it’s a real crapshoot. You might get an ad pitching *bass* guitars, or one from a shoe store selling *Bass Weejuns®*.” The software has no idea that there are concepts like “bass fishing” or “electric bass” or “bass and treble controls”. At best, explains Mracek, it sees hundreds of possible keywords - many equally or more ambiguous than “bass” - with potentially disastrous results.

And for ad buyers, who wish to both maximize the return on their ad dollars, as well as protect their brand, that’s a real problem. “It’s a fact of life with today’s technologies that ads are constantly being served up in the wrong context,” he says, “and sometimes notoriously so.”

So how do you unearth the millions of concepts that are represented in Internet content, and determine in real time, as a Web page is milliseconds from being displayed, which of those concepts are on *this* page? Mracek says that NetSeer’s scientists saw the Internet parallels in the microbiology breakthroughs, and devised a novel solution.

“Using essentially the same top-down algorithms that succeeded in partitioning a cell’s processes into ‘islands’ of functionality, we have been able to examine the entire Internet - literally trillions of words - and identify islands of *concepts* - complete with the strength of their representation across the Internet - and the strength of their relationship to other concepts.” (The concept “bass” has a strong relationship, for example, to fish, fishing vacation, tuner, shoes, speakers, etc., while the concept “bass fishing” has no relationship to “stereo system” or “footwear sales extravaganza”).

Then, armed with a highly definitive list of concepts - over 50 million, described by one, two, three or more words, and a list of close relationships in the billions - NetSeer devised a way to parse any Web page, in real time, into sets of those concepts. And since they were working with concepts, rather than naked keywords, they were in a position to definitively match ad placements with the actual concepts that brought users to the page. So they did, and the results, says Mracek, have been outstanding.

“We have been able to consistently equal or outperform keyword-based ad placement but with *or* without a keyword!” Mracek reports. In actual fact, NetSeer has seen a 2-to-4 times improvement in click through ratios over context-based approaches, and Mracek believes that concept-based targeting will do no less than change the “fundamental DNA” of Internet advertising - now a \$20 billion annual market.

“Truly understanding a user’s interest in real time is the ultimate way to achieve relevance,” concluded Mracek, “and concept-based ad placement will maximize the return on investment for both the advertiser and the publisher.”

NetSeer’s technology is dynamic and scalable, and is able to integrate new concepts into its taxonomy as soon as they obtain relevance on the Internet. The company continues to develop its algorithms, and has rolled out the first of several planned products - “[ContextLinks for Publishers](#)”.

## About NetSeer

NetSeer, Inc. ([www.netseer.com](http://www.netseer.com)) NetSeer is an ad technology company that determines user intent from a web page with the same accuracy as traditional search. NetSeer’s breakthrough technology has delivered measurable gains in online ad performance previously unattainable in Internet advertising. NetSeer received its initial funding in 2007 from Onset Ventures and Mission Ventures. The company is located in Santa Clara, CA.