

COLUMNS

Are media buyers using the best algorithms?

March 24, 2015



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It has been hard not to hear conversations referring to algorithms at any ad-tech conference, but there seems to be persistent confusion around what an algorithm really is, how algorithms might help in programmatic ad transactions, and how good these decision-algorithms truly are.

In the context of programmatic advertising, an algorithm may be defined as a set of rules to help make buying and selling decisions in finite steps using the available data at the moment. Its major role is to help carry out the automation of data-driven decision making, which is one of the most challenging yet exciting problems for data scientists.

Also, it requires identifying an audience and dealing with a massive amount of data to address each ad opportunity, matching each opportunity with the right ads to optimize campaign goals. But are marketers using the most advanced algorithm to best optimize audience engagement across channel?

Generational divide

In a typical real-time bidding (RTB) process, when a user visits a Web site or opens an application, a piece of code on the client device or publisher ad server or content servers sends an ad request to an ad exchange, which in turn forwards the request to demand-side platforms (DSPs) asking them for a bid.

After receiving ad requests from exchanges, a DSP has fewer than 50 milliseconds to send a response back to the exchange. A set of algorithms must be run to help make the final decision that boils down to bidding or not bidding, what price to bid, and if there is more than one campaign or campaign flights, for which one to bid.

In a single day, there may be tens of billions of ad opportunities needing evaluation, and hundreds of thousands of campaigns to run, with each may be further divided into many flights. How algorithms help make those decisions indicates how well a decision engine realizes the key metrics goals.

Early platforms from 2007-09 for demand-side decision engines were essentially bid managers that provided a tool for users to connect to multiple exchanges and manage campaign and bidding rules by manually specifying targeting criteria and prices.

Second-generation online DSP algorithms have started to incorporate learning capabilities to model campaign response by using campaign performance data to increase optimization.

While this was a significant step forward, capabilities are limited by the data they can use to address audience, reliance on cookie data for attribution, and limited learning capability to adapt to different campaigns.

Like the first-generation system, the second-generation system provides a large number of knobs to turn in to optimize campaign goals.

The number of possible combinations is virtually endless as more data dimensions are used. And the onus is on the systems operators to go through various combinations to optimize individual campaigns and ROI.

A more serious limitation of the second-generation DSP algorithm comes from their reliance on fixed Web-based data such as cookies.

A second-generation system cannot be used effectively for addressing ad opportunities within audiences from mobile and other new devices and media channels where cookies may not be available.

As a result, learning algorithms must change. Otherwise media buyers will be significantly limited to the level of optimization and operational efficiency that they can achieve, and will still rely on data analytics talent to use the system.

Decisions, decisions

Good decision algorithms not only need to match the right ad opportunity for each individual campaign, campaign flights or creative and figure out the right price for the right ad opportunity, but also need to take into consideration the budget or other business constraints and requirements, and look into the future for inventory availability, finding the right time to spend the money to explicitly optimize measurable business goals.

Third-generation algorithms are emerging to meet these needs.

This new generation of algorithms is found in mobile-first platforms that push the envelope on both the data and algorithm front at the same time.

It is known in theory that there is no universally good learning algorithm for all situations the best algorithm for each situation is dictated by the unique patterns hidden in the data and how well they describe the underlying relationship between the dependent and independent variables with minimal complexity.

While a traditional DMP typically provides only partial information, this is changing.

Led by mobile programmatic platforms, we are seeing the emergence of purpose-built DMP. These provide predictive signals by putting together crossdevice audience profiles overlaid with real-time media touch-point data and performance measurement, thus providing comprehensive information enabling the best possible performance.

This new science has completely automated the decision-making process and optimized configurable business metrics to desired levels, while balancing price tolerance.

THE NEW GENERATION of algorithms overcomes the limits of earlier-generation systems to help bring a new level of effectiveness, scale and simplicity.

Designed for the mobile-first world, these device- and channel-agnostic algorithms, along with a mobile-data platform, fill a missing link in marketing automation. They do so by becoming the core engine for automating and optimizing audience engagement across devices and media channels.

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