

51Degrees' Device Detection Boosts Persona.ly's Performance by 15%

Persona.ly

Which device attributes improve Ad-Tech machine learning algorithms?

Summary

Mobile User Acquisition Start-up, Persona.ly's focus on machine learning and data science had yielded impressive results for app advertisers. However, they felt that more information about a potential user's device would yield even better returns. By adding 51Degrees' Device Detection to their algorithms, some interesting device traits and fraud indicators were uncovered which were used to increase overall performance by 15%.

Background: Informed Advertising & The Duopoly

Established in 2011, Persona.ly is a global programmatic ad-tech company specializing in the delivery of mobile ads to users who are likely to yield a high Life Time Value (LTV) for their partnered advertisers. Using a combination of machine learning and data science with playable and interactive rich media ads, user acquisition doesn't end at installs. It continues to in-app events such as registrations, reaching specific levels in a game and in-app purchases eventually leading to an LTV calculation.

Persona.ly's algorithms use different variables to inform bid requests and optimize returns for advertisers. These include:

- Temporal and environmental data e.g. the time of day or the day of the week.
- Behavioral data - what other apps the user uses, the context the ad will be shown in, the tendency to click ads in general, the session depth (if it's the first ad he would see in that session) and usual usage hours, along with several other features.
- Demographic data - reported or predicted age, gender and geo-location.

Facebook and Google

Nearly 60% of digital advertising is controlled by Facebook and Google (popularly referred as the "Duopoly"). Likes and dislikes, among many other metrics, are used by Facebook to provide advertisers with individual's behavioral preferences. Google makes use of search history for a similar purpose. With consent from the individual, both will provide demographic data such as age and gender. That said, this information isn't shared with DSPs like Persona.ly, meaning they can't use it to optimize their bidding strategy - they can only rely on the data available in the bid-stream, their data enrichments, and predictions made of off that data.

60%

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Data and Artificial Intelligence

By 2018, Persona.ly's artificial intelligence (AI) algorithms were fully optimized for using data from the bid-stream and aggregated data they collect in their DMP, recognizing the differences in markets as diverse as Japan and the United States. Data from the bid-stream includes:

- Location
- Operating System (OS) and version
- User Agent
- The app the ad is going to be shown in

Aggregated data Persona.ly collect in their DMP includes:

- Data from the bid-stream
- Interaction with their ads
- Predicted age and gender (where this information isn't included in the request).



However, machine learning results are only as effective as the information provided; the more knowledge they have to work with, the more relevant their output is going to be. Therefore Persona.ly questioned if there might be additional sources of information they could add to their algorithms to further improve performance for advertisers.

The Challenge: The Device Dimension

Consumers increasingly purchase electronics for purposes beyond telephone calls, messaging and social media. Video streaming, real time gaming, audio and 3D are increasingly important factors used by device manufactures to differentiate their products. Could these device factors also relate to the apps users are likely to install and use?

Data scientists at Persona.ly had access to the very basic device information provided via the Open Real Time Bidding (OpenRTB) bid stream used by publishers, Sell Side Platforms (SSP), Ad Exchanges, Demand Side Platforms (DSP) and advertisers to trade programmatic advertising. They felt that the device type information (Smartphone or Tablet) was not sufficiently accurate or comprehensive enough to further optimize advertising for their clients. Bid request data quality varied based on the upstream companies involved.

A market analysis was undertaken to identify solutions that could consistently add as much additional information as possible about devices, browsers, apps and operating systems to the machine learning algorithms.

The team knew that solutions which scrape websites like GSM Arena, Amazon or Flipkart were not going to provide data as accurate as one where devices are researched manually and verified against sources of authority such as a manufacturer, vendor or network operator.

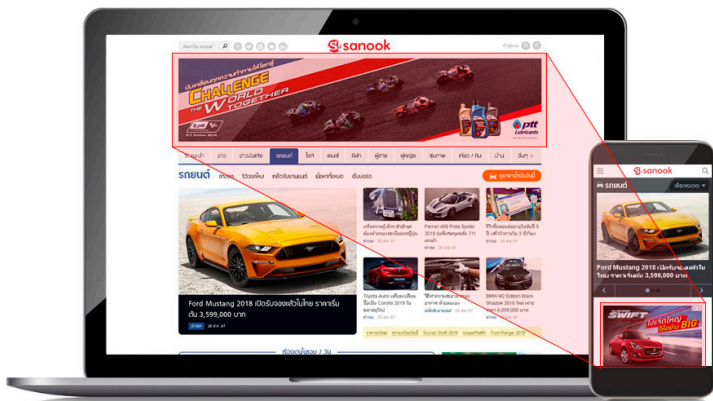
The Solution: Device Detection from 51Degrees

Also established in 2011, 51Degrees provides the fastest and most accurate solution for device identification, optimized for web, app and network operators. Clients such as Tencent, Disney and eBay, alongside over 1.5 million websites, have access to data which includes device price, age, battery capacity and screen size, all in real time.

51Degrees was selected due to their manually researched, comprehensive and relevant property set, as well as a track record of innovation, support for web and app environments, micro-second detection performance and a flexible commercial model.

The solution was easy to integrate into the OpenRTB bid stream supporting over 4 million queries per second, handling complex Apple and Android devices.

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51Degrees led the way in device detection with app support and comprehensive hardware specifications at least one year before more established competitors. I'm so proud to be able to explain how these innovative features are adding value to Persona.ly.

James Rosewell,
CEO & Founder at 51Degrees

Testing the Theory

Before utilizing device detection from 51Degrees, Persona.ly were already able to determine whether a user was more likely to install a new game from their behavioral and demographic data.

For example, a young male between the ages of 18 and 25 with one other game already installed on his device was enough data to suggest he may be interested in a new game. However, it isn't enough to know if he's a potential quality user for a brand new, graphically demanding game – his device may not be powerful enough, and it may lack the required RAM or graphics processing abilities to provide a smooth and engaging gaming experience.

However, by adding data from 51Degrees into their algorithms, Persona.ly were able to truly understand their customers. This meant that if the above user presented himself and happened to be using a 10-year-old iPhone without the latest iOS software installed, Persona.ly would know that the chances of him downloading a graphically demanding game and then going on to become a loyal customer, were slim at best. Having this data in their arsenal allowed them to make time and cost-efficient bidding decisions.

The Results: Improving Performance Through Device Intelligence

The device data provided by 51Degrees enables Persona.ly to find more granular segments which means they can make more informed decisions and improve overall performance.



51Degrees' Device Detection solution enriched our existing data and gave us access to more granular segments than we could previously tap into. These segments allow us to adjust and make our bidding activity more effective for our clients. All in all, we experienced a 15% improvement in performance due to the additional data provided by 51Degrees

Ofir Pasternak, CEO & Founder at Persona.ly

Persona.ly analysed two billion ad requests from Japan and three billion from the US during December 2018. During this time, some unsuspected attributes were identified as being significant in terms of improving performance:

Pixels per Inch (PPI)

In the US market, where mostly social casino apps were advertised, higher Click Through Rates (CTR) were observed for devices with lower PPI. This led to the conclusion that Social casino apps do not require high end displays to be engaging and usable.

Device Memory or RAM

When devices were grouped by 2GB increments, a higher CTR was observed for devices with larger memory. This was relevant for both action titles in Japan and in social casino apps in the US, showing that generally, the more RAM the device has, the more lenient the user is towards engagement

Battery

The battery life of a device helped Persona.ly to define the person holding the phone. For example, gamers need a longer battery life on their devices, to allow for extended playtime and the increased

power demands of the game. During the requests analysed, there was a negative correlation between the battery life of devices and the win-rate Persona.ly experienced.

Fraud

Persona.ly were pleasantly surprised to discover 51Degrees could help uncover fraudulent advertising requests. By identifying malformed User-Agent strings and not bidding on suspicious ones, 7% of poor-quality bid requests are now filtered out.

Release Year

In the US market, the device release year had a negative correlation with Persona.ly's win rate, meaning that the newer the device, the lower the win rate. While in Japan, the win rate seems to be unaffected by how recently the device was released. This showed Persona.ly that US buyers are already keen to use the release year as a feature, and that APAC buyers are not, which allowed Persona.ly to focus their bids on newer devices without increasing their bids, leading to significantly improved performance.

Conclusion

By suspending bidding on requests from devices with some features, and paying more for others, Persona.ly were able to improve performance by 15% within a few months and help deliver more engaged users to their advertisers. Further improvements are expected as the data is applied at a more granular level to specific campaigns and apps. What is certainly clear is that advertisers faced with an agency asking them, "which devices they want to advertise on" need to rethink their choice of question.

Persona.ly, supported by 51Degrees, are using device intelligence to inform their strategy and, as such, are a great choice for app advertisers seeking an innovative partner applying the most advanced techniques.

Contact our team to find out more about how 51Degrees can help you achieve results like this.
sales@51Degrees.com | [+44 118 328 7152](tel:+441183287152) | www.51Degrees.com