

Customer Tracking Technologies

CAMERA

SMARTPHONE

BLUETOOTH Low Energy (BLE) BEACONS

Whitepaper



Amitesh Sinha, CIO
amitesh@iconnectgroup.com

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There is a revolution happening in retail stores, and the concept is simple — retail marketers are shifting their focus from building revenue through opening new stores and rather on maximizing revenue *within* each store. How are they doing it? By using their space efficiently.

This requires implementation of a wide range of marketing technologies that can track and recognize customers using cameras, their smartphones, Bluetooth beacons, and by implementing various Shopper Intelligence Analytics (SIA) technologies.

The Crux of the New Revolution

Ever since the inception of online retail stores and the rise of online tracking technologies, brick and mortar retail stores have been sorely suffering from a dearth of marketing metrics for their customer, and data points, and tracking technologies, and analytic software.



While online marketers continuously compute data to develop comprehensive customer behavior reports and perform calculated experiments to increase customer engagement and boost revenues, retail marketers had been using the traditional trial and error methods. Recently, three technologies have come to the fore promising a holistic approach for analyzing customer behavior in retail stores.

These include:

1. The use of surveillance cameras
2. Location based marketing through smartphones
3. Use of Bluetooth Low Energy beacons for pin pointing customer location

There details follow:

Watching Over Customer Behavior

Retail marketers are now tracking customer behavior in their stores using surveillance cameras to identify and quantify their shopping habits, queuing times, and preferences for different products and shopping space layouts. The technologies employed range from the simple to mapping heat maps for the entire store.

The technology is already in place in various airports and shopping centers where it is being used to monitor the queuing time of the customers, their preferences, disabilities, as well as gauging how customers spend their time after going through security, and which shops they mostly visit at duty free. Shopping malls routinely use it to improve layout of stores and aisles and make it easier for customers to enjoy a good shopping experience.

How does it Work?

Surveillance cameras legally and routinely record footage of all the customers and visitors in the store. Camera tracking for marketing simply utilizes the same apparatus to track customers who frequent the store and keep record of customer behavior in a database. This information can include information about personal disabilities, the products that they frequent, or found hard to find, etc.

When the customer visits the store again, the software matches the image with an existing database. If a match is identified, the program can alert the staff with information about customer preferences and last purchase orders.

Benefits for Retail Marketers

The facial recognition technology allows retailers to understand customer needs in 3D spaces and as a result, create unique and tailor made experiences for the customers.

Over-pixelated Tracking



Tracking complete footages of customers has its limitations. Marketers can use the data collected only in a certain number of ways *without* infringing on their customers' privacy.

To overcome these limitations, retail marketers are employing different methods of tracking foot traffic and the time spent in store by their customers. One of them includes using cameras that over-pixelate the image while counting the traffic in the store. Euclid and Shopper Trak were the earliest developers, whose ideas were used to further the rise of this technology.

How Does it Work?

The customer's movement is tracked using devices and sensors that count customers that walk into the store as well as how quickly they walk out. The sensors have multiple lenses that over-pixelate the image and prevent identification of the customer. As a result, the data collected is purely anonymous and aggregate.

Heat Seeking Cameras: Prism Labs and Heat Mapping

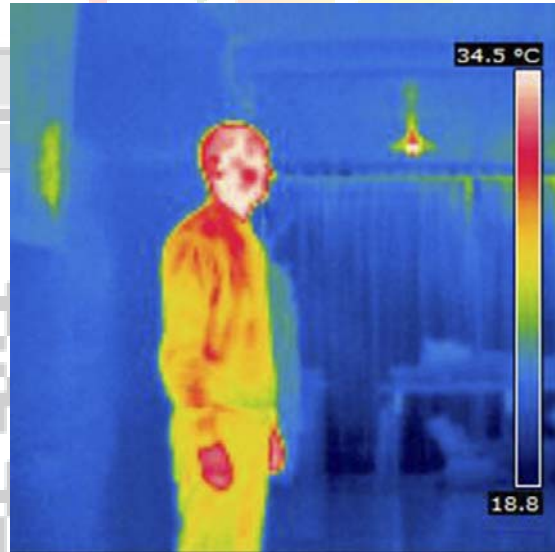
Online marketers have heard of CrazyEgg, the online heat mapping tool that lets webmasters and marketers alike know the areas on their website that their visitors were drawn to and interacted

with the most. Now retail marketers are welcoming a real life heat mapping tool in their stores — one that tracks the activity of customers in store and continuously creates a heat map of the store shelves. This gives the store owners a new look at how customers find their store and how often they interacted with the shelves, and which they simply left out.

A San Francisco startup, the Prism Labs are the pioneers who have developed a software technology that allows marketers to easily map the behavior of their in-store customers.

How Does it Work?

The technology uses surveillance footage for the store and uses it to track customer's movements. The imaging software continuously overlays image after image to create an aggregate of all the customer whereabouts as well as the items they touched. The end result is shown as a heat map with the busiest regions in the store shown in brighter color coding.



Furthermore, the software also offers an option for timeline that allows marketers to know the activity levels in the store, the shopping hours that were the most lucrative, and how customers navigated through the space. The best part about the technology is that the data collected is anonymous — though the technology relies on video footage from the security cameras, the aggregate data completely erases people from the video.

Benefits to Marketers

The technology is able to highlight anything in your retail space (tables, shelves, etc) and give them a very clear read of what products people are picking up, which areas they frequent, and which they are not. It gives them a clear idea of what is working in their layout and placement and what is not. For retailers, this is a valuable tool for making decisions about product placement and floor layout.

Tracking Smartphones with MAC Addresses

Every smart device has a unique Media Access Control (MAC) address. This address is used to connect to Wi-Fi routers available in shopping centers and retail stores. This is part of a larger field of location based mobile marketing (LbM). The basic tracking premise in it is that it allows retail marketers to easily track customer's location inside their retail store, and like other technologies, maintain a record of their preferences. But unlike other technologies, LbM allows marketers to send out promotions and discounts tailored to the needs of their customer's smartphones.

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How Does it Work?

A smart phone, by design, is always searching for the strongest WiFi signals in the vicinity. When the customer steps into the store, and if the store offers WiFi, the smart phone will identify itself by sending out its MAC address to the WiFi router. In tech-terms, it's called a handshake. For marketers, it's time for creating a small account for the customer — and since they have to name it, the MAC address serves as the account title.

With the help of specialized tracking devices, marketers can triangulate the smartphone's position and hence the customer.

Benefits to Marketers

What more can marketers want than knowing which area of the store their customer is in? Since MAC address tracking also allows them to add customer preferences into their database, they can easily match past transactions. Marketers can use that to send targeted promotions through mails, or on the app that a customer has downloaded for using the WiFi service.



Tracking with Bluetooth Low Energy Beacons

Location based marketing has some limitations. LbM can track customers to within a few feet of the shelf. Furthermore, tracking customers using LbM consumes a lot of energy and still lacks the accuracy that the marketers now want.

iBeacons, or Bluetooth Low Energy (BLE), allows marketers to locate customer to within inches of store shelves as well as track their foot traffic through the aisles. Originally, iBeacon was a brand name coined by Apple for its micro-location technology. Now a majority of new devices entering the market, are all BLE compatible. This includes, among others, Nokia Lumias, Samsung Galaxy Nexus, and the BlackBerry Z10 and Q10, etc.



How Does it Work?

These BLE signals can be transmitted between compatible devices through the use of compatible as well as third-party hardware commonly known as beacons. This requires the customer to opt in to this option, as it not only allows the marketers to pin point the exact location of the customer inside their store, but also to directly push relevant content to their devices.

Benefits for Marketers

iBeacons and BLE are providing marketers with a completely new marketing channel with which to pinpoint the location of their customers and send out targeted and relevant content to their devices.

Why Marketers Are Excited



These new marketing technologies are keeping retail marketers awake at night — thinking of the diverse ways they can use the data to expand their customer base, increase brand following, and boost revenue.

Because Now They Can Micro-Manage Customer Behavior

The three customer tracking technologies (camera, BLE, and smart phone tracking) allow marketers to understand what is attracting their customers to different parts of their store. Interior shopper intelligence analytic (SIA) services marketers to know how quickly a customer walks out of the store, while the combination of these with SIA allows marketers to analyze the patterns of the masses so that the retailers can better serve customers. Examples, can range from experimenting with the placement of a product based on the traffic that an area is receiving to changing the layout of an aisle and shelves to make it roomier and hence increase customer stay, etc. The ideas can easily be expanded throughout the store.

Because they Offer Important Metrics

Online retail stores have it easy — they simply have to manage a 2-D environment and make it user friendly. Brick and mortar retail stores, on the other hand, have to deal with other bludgeoning questions. These include which areas are most frequented and why? What type of environment, space layout, and shelf placement increases customer engagement? Did a messier environment draw more customers to a specific area or a cleaner one? What about the number of items that were on display: do customers prefer a minimalist layout or an ambient one? The tracking technologies offer a diverse range of metrics that can be computed to give a holistic analysis of customer behavior.

Because they increase Customer Engagement

Customer engagement, the holy grail of all marketing, is a metric that brick and mortar retail stores have been lagging in since the inception of online retail stores. For example, by counting the number

of customers that have entered the store, they can easily monitor the availability of staff to look after their concerns.

It often happens that customers simply leave the store because there weren't enough staff members to serve them. As a result, retailers can aggregate the number of people that normally come to their store and hence employ more staff members to serve these customers and prevent them from leaving the store out of frustration for the lack of staffing.

Conclusion

Retail marketers have been slow on the uptake of in-store analytics, but with the advent of multiple technologies to track, locate, and engage customers inside the store marketers can now combine them to create a holistic marketing strategy for their customers. It is obvious that customer concerns will shape the way these technologies will be used, but there can be no doubt that retail marketers are taking the bandwagon to in-store analytics.



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About Amitesh Sinha

Amitesh Sinha is a contemporary technology consultant based in North America. With over 20 years of hands on experience in developing and deploying innovative solutions for retail, Sinha has gained a distinguished reputation for inventory software solutions, creating data bases, STORIS Furniture Software, POS Furniture Software, and reengineering of software with extended features and support.

Mr. Sinha's professional synergies make him a significant choice for commercial and government agencies where he has been successful delivering cutting edge solutions and services according to the company demands and contemporary business requirements. He is in the list of top most furniture consultants, retail consultant and retail home furnishing specialist, facilitating Ashley home-stores providing centralized, unified and easily replicated database system to perform their query operations on a single click.

Sinha earned MBA from JBIMS, Mumbai India and started his professional career from Stock Holding Corporation India Limited and served for 07 years. In 2000, he moved to USA, and established iConnect group, a professional consultancy business with a focus on technology management and delivering services. The iConnect group currently works with top notch companies to steer short-term and long-term technology strategies, and providing flexible solutions by anticipating their needs and requirements.

Email – amitesh@iconnectgroup.com

About iConnect

iConnect is a leading technology service provider as well as a consultant in technological innovation, management, and IT. Our services span the length of the software development spectrum including integration, infrastructure services, mobile apps, staffing, and web design solutions for our clients.

Committed to technological innovation and progress, we have been serving retail, homebuilders, public sector, transportation, RFID, and more.

About SIA Technology

Shopper Intelligence Analytics (SIA) is our propriety technology that answers business actionable questions for you:

1. How much shoppers are you drawing into your store?
2. How often are shoppers visiting your store, and for how long?
3. Which zone is attracting the most shoppers?
4. How is your staff interacting with shoppers?
5. Are queues being managed properly? and more.

SIA helps you solve your retail challenges and unlock sales opportunities. It allows you to easily obtain actionable business insights and metrics about customer foot traffic patterns, behavior, and interaction with staff members in your store(s).

[Our SIA technology](#) can automatically and passively detect and collect information about your shoppers and staff members while completely complying with the industry standards and privacy regulations. This includes sensing customer/staff-member presence and location in the store and portraying the data in a meaningfully actionable manner.

Rollout with SIA in no time — It's easy to install, offers high accuracy of location, does not require customers to install apps on their devices, and allows you to manage multiple sites and stores as well as multiple floor plans and/or zones per site/store in real-time.

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