

# Chapter 28

## Smart Advertising

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### ABSTRACT

*Currently, there is a problem of contextual advertising. Advertisers want to be able to target clearly the audience, because user experience and revenue depend on the relevance of the displayed ads. Contextual advertising supports much of the Web's ecosystem today online, but not in "offline". The authors' task was to develop a system prototype, which gives the ability to display advertising based on users' interests in real life based on the best techniques of contextual advertising.*

### INTRODUCTION

Mobile has changed the way we think about digital audiences. Web technologies development has radically changed the traditional marketing and advertisement campaigns. Thanks to the contextual advertising on the Internet the advertisements themselves are selected and served by the automated systems based on the identity of the user and the content displayed. Contextual advertising makes a major impact on the earnings of many websites. Because the advertisements are more accurate, they are more likely to be clicked, generating revenue for the owner of the website. There are many different aggregators, which collect information about the users' interests. Then this information is used to display the most relevant advertising for a particular user.

Contextual advertising – is a tool designed to increase sales and attract new customers through the Internet. But what if we use the data collected on the Internet about the person to display the advertisement in real life? On the streets, at bus stops, in metro every day we face a huge amount of advertising. And usually these ads not interesting for us, because they are designed for a huge audience, without considering the specific interests of people. In our research, we aimed to move a model that works good online to offline.

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## LITERATURE REVIEW

Contextual advertising has been of significant interest for a number of literatures. In various fields has been published numerous articles and research. They are all agree on one that today, the use of advanced digital tracking software within the performance marketing industry is widespread. By engaging solutions that capture detailed data points and analyze every step a consumer takes on the path to a conversion, advertisers can better understand which ads, offers and channels are driving the most profitable results, and more successfully allocate their digital spend. Because their success depended on it, performance marketers began to seek out more robust solutions capable of tracking large volumes of data, rapidly, and at a very granular level. This is because the multiple data points now available for analysis hold valuable clues that decision makers can leverage to assess and refine their strategies (Albert, Rajagopal & Sevlian, 2011).

Another topic that has received much attention in this field has been the analyze of person data in real-time. In the fast-paced world of digital advertising, even the most sophisticated data tracking and analysis is basically useless if it can't be accessed, shared and acted on in real-time. The shelf life of online data is short, so an ability to capture and analyze information at lightning speed is key (Evans & Chi, 2008). Technology's ability to quickly process and extract useful information from raw data has improved exponentially in recent years. Businesses that don't take advantage of real-time tracking and analytic innovations will be left behind.

Extensive literature exists on social behavioral advertising (SBA) (Yan, Liu, Wang, Zhang, Jiang & Chen, 2009), advertising networks profile a user based on his online social activities. Using this profile, advertising networks show ads that are more likely to be of interest to a particular user. SBA presents both benefits and downsides to users. If their interests have been accurately profiled, users will receive more relevant advertising. However, collecting data about users' online activities can potentially violate their privacy.

However, until recently most such studies could only use collected data for online contextual advertising and did not use it to identify common interests of the users and display advertising on billboards and other types of city ads.

## ALGORITHMIC FRAMEWORK

To achieve these goals our study uses several methods (algorithms). We introduced the system with some basic functions: client-server application to obtain data of the user's interests, determine the user's location to display the most relevant advertising for a particular user. Finally, the media system with Internet connection which interacts with client application will show ads for a person or a group of person. We can see the concept of system in Figure 1.

### Location-Based Aggregation Audiences at Scale

We collected location data on the users' smartphone at regular intervals. After that data collected on a server in the background. This is how we identified the user for which we display target advertisements. But what if at the point of advertising will be multiple people? We used a proprietary algorithm to identify the common interests. Depending on the number of users near the point of advertising we are building

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