Modeling Dwell Time and View Ability Prediction on Web Pages using Convolutional Neural Networks

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Abstract

The most important revenue for online publishing industries is to displaying the advertisements.This paper proposes learning models dependent on CNN to predict the viewability depth of the webpages and also the viewability depth of advertisements displayed on the webpage in the predicted part.This study proposes to solve the problem from two angles: 1) scrolling behavior and 2) dwell timeThe first phase, ad viewability is predicted by estimating the probability that a user will scroll to the page depth where an ad is located in a specifc page view. the second phase, ad viewability is predicted by estimating the probability that the page depth will be in-view for certain seconds.CNN proposed to predict the viewability of any given page depth in a specific page view.The experiments show that the proposed algorithms significantly outperform the comparison systems.

Keywords: *Advertisement, viewability   depth, web pages, CNN*

I. EXISTING SYSTEM

By using LSTM-RNN (Long Short Term Memory-Recurrent Neural Network) it works in all fields but it does not having accuracy and viewability prediction is less.It is slower than other normal activation functions.

II. PROPOSED SYSTEM

We are the first to propose dwell time prediction models for ad advertising in web publishing.In the proposed system we use convolution neural method to find the webpage depth.We propose a new deep learning model for our problem that adds residual connections and encoder-decoder structure within CNN.By using the CNN larger data can process in less amount of time.

III. LITERATURE SURVEY

A. Viewability Prediction for Online Display Ads

Users do not typically click this type of ads, rendering the traditional form of pricing structure based on clicks or conversion to be ineffective

B. Ad viewability prediction on web

However, more than half of the impressions are actually not viewed by the user because they don't scroll down the page enough to view the ads.

C. Online Display Advertising Markets: A Literature Review and Future Directions:

The inter-relationship among these various inputs or their efficacy with respect to cost.

D. Packaging and Sharing Machine Learning Models via the Acumos AI Open Platform

The largest advantage of protocol buffers is that it is compact and efficient compared to XML-like schemes, with the ability to process large volume of data. The training of ML on images is expensive and time-consuming. It involves a large amount of human effort in labeling.

E. Recommendation Algorithms for Optimizing Hit Rate, User Satisfaction and Website Revenue

The drawback is that the user satisfaction information (i.e., rating values) cannot be efficiently leveraged

IV. WEBPAGE VIEWABILITY PREDICTION

This module contains predicting that how many users viewed the webpage particularly an area of webpage of any advertisement allowed websites by using CNN algorithm. [1].It also contains the submodules:

A. Registration

The registration module allows the user to create login username and the password by submitting their information like mail id, phone number, name, etc.By registering the network or cloud the user can gain access to the resources.

B. Login

In this module the user can login by using their unique username and password.The login module verify the user given username and password with the stored username and password.If the username and password is matched the user can access the resources. If it does not match the user does not allowed accessing the resource.

C. Preprocessing

The preprocessing is used to identify impossible data combinations, missing data's, out of range value, etc. [2] the preprocessing is used to remove the damaged data's, and the empty data's in the overall dataset.
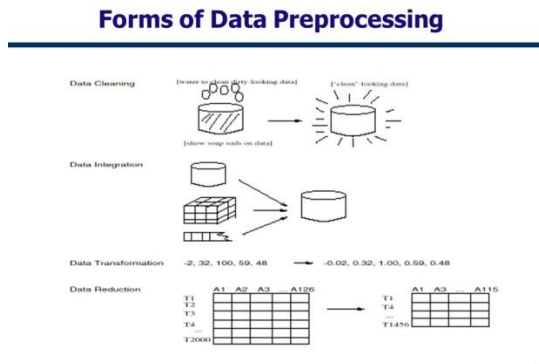
D. Feature extraction

When the input data to an algorithm is too large to be processed and it is suspected to be redundant, then it can be transformed into a reduced set of features.Determining a subset of the initial features is said to be feature selection / Extraction.

F. Classification

The classification process is used to identify the category of the data's.The classification is used to identify impossible data combinations, missing data's, out of range value, etc.The classification is used to remove the damaged data's, and the empty data's in the overall dataset and also predict the relationship between the data.

V.ADVERTISEMENT VIEWABILITY PREDICTION

The advertisements are published by the publishers on WebPages. We can't know that users watch the ad or they may skip the ad[3]After predicting the dwell time of web pages,we are going to predict the advertisements viewability depth so that how much time the users watched the advertisement.

A. Algoriithm

CNN which means Convolutional Neural Networks is used to work in particular field. Thus the efficiency of using this algorithm is very high and in accurate manner.

This algorithm contains 3 layers:

- Convolution Layer
- Pooling Layer
- Fully connected Layer.

1. Convolution Layer

Each unit of this layer receives inputs from a set of units located in small neighborhood in the previous layer. Such a neighborhood is called as the neuron's receptive field in the previous layer. [4]

2. Pooling layer

It progressively reduces the spatial size of the representation, thus reducing the parameters to be computed. It also controls over fitting.

3. Fully Connected Layer

There maybe one or more fully-connected layers that perform high level reasoning by taking all neurons in the previous layer and connecting them to every single neuron in the current layer to generate global semantic information. [4]
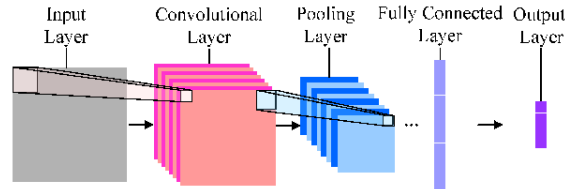
VI. ARCHITECTURE
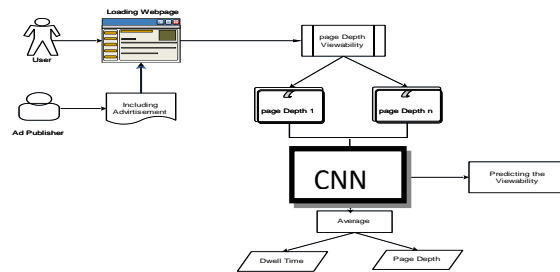
VII. SYSTEM REQUIREMENTS

H/W System Configuration:-

Processor - Pentium –IV

RAM - 4 GB (min)

Hard Disk - 20 GB

S/W System Configuration:-

Operating System: Windows 7 or 8

Application Server: Apache

Front End: JSP

Back End: MySQL

VIII. CONCLUSION

Online publishers and advertisers are interested to predict how likely it is that a user will stay at a page depth for at least a certain dwell time, defined as webpage depth viewability.[3] Viewability prediction can maximize publishers on investment.The proposed models predict the viewability and exact dwell time for any page depth in a specific page view. So letting the publishers know the highly viwed part of webpages and publish their ad in that part.

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