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Convex Optimization Algorithm for Product Recommendation Using Microblogging Information

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Abstract

The ecommerce and the social media is connected together where the products advertisements can be given by the ecommerce website which can be viewed by the social media users that is facebook users can view the reviews given by the facebook friends or friends of friends of the users. The user may get an idea about the product features and also can be able to decide whether to buy the product or not. And also the user can give the review when the user knows about the product. In facebook database, all the reviews of the users or friends or friends of friends are stored. Among all the reviews, the overall count of the users who have given the positive comments and the negative comments are displayed .From this, the users can easily decide whether the product is useful or not. In the proposed system, convolutional neural network is used for more advanced learning.

Keywords: *Convolutional neural network, convex optimization algorithm, social media, e-commerce, cross site product recommendation*

INTRODUCTION

The purpose of the system is to propose a convenient way to choose the best product using convex optimization algorithm for simultaneously learning meta prior. Classification task in one domain of interest, but sufficient training data in another domain of interest where data may be in another domain of interest. Knowledge transfer is done successfully, would greatly improve the performance of learning by avoiding much expensive data-labeling efforts. Connecting the social media and e-commerce website where the experienced users such as friends and friends of friends in the facebook can give their reviews [1–5]. From these reviews the quality or the worth of the products can be concluded and recommended to the users. The recommendation and de-recommendation count can be specified to decide the quality of the product. The boundaries between e-commerce and social networking have become increasingly blurred. In the e-commerce websites the user can sign on the websites using their social network identities such as their Facebook or Twitter accounts.

In this project we propose more advanced deep learning models such as Convolutional Neural Networks can be explored for feature learning. The classification task gives the necessary data from the sufficient training data in another domain of interest, where the latter data may be in a different feature space or follow a different data distribution. In such cases, knowledge transfer, if done successfully, would greatly improve the performance of learning by avoiding much expensive data-labeling efforts. In recent years, transfer learning has emerged as a new learning framework to address this problem [6–10].

RELATED WORK

By using convex optimization algorithm, the data can be collected from two data sets and making both the ecommerce website and social media website to be connected. The users do not have knowledge about that product. Using recurrent neural network only users and products can be represented. The customer gets dissatisfied, if the product gets failed.

CONVOLUTIONAL NEURAL NETWORK

The convolutional neural networks are used to collecting the various reviews from the friends of friends and conclude the positive and negative reviews without any loss of data.

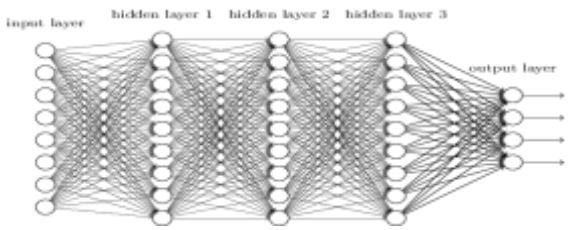

Fig. 1: *Convolutional Neural Network.*

Convex Optimization Algorithm

Convex Optimization Algorithm is a technique which is used to collect the reviews from various one domain of interest to another domain of interest. This convex optimization algorithm converts the local minima to the global minima. Convex optimization is a method through which the data is collected from the two website as ecommerce and social media. The convex functions are used to represent in the same latent space [11–15].

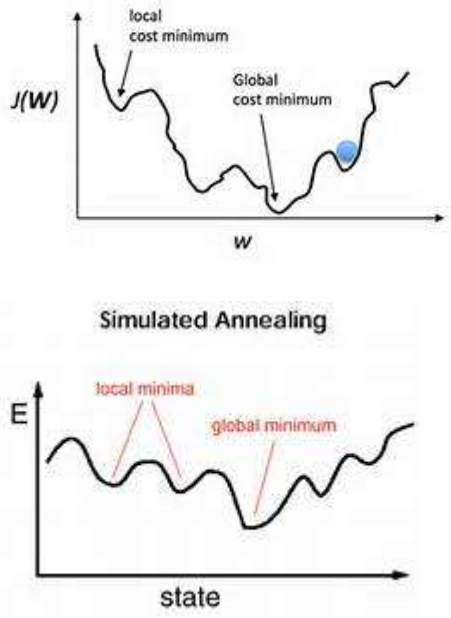

Fig. 2: *Convex Optimization Algorithm.*

Definition and Basic Properties

Definition 3.1.1 [Convex set]

1) Let x,y be two points in Rn. The set

$[x,y] = \{z = \lambda x + (1 - \lambda)y : 0 \leq \lambda \leq 1\}$

is called a segment with the endpoints x,y. 2) A subset M of Rn is called convex, if it contains, along with every pair of its points x,y, also the entire segment [x,y]:

$x,y \in M,\ 0 \leq \lambda \leq 1 \Rightarrow \lambda x + (1 - \lambda)y \in M.$

Note that by this definition an empty set is convex (by convention, or better to say, by the exact sense of the definition: for the empty set, you cannot present a counterexample to show that it is not convex)

Transfer Learning Using Convolutional Neural Network

The geometrical representation of linking the two points [x, y] is said to be convex.The pair of x and y points in a entire segment is linking the points. This method is used to match the positive and negative reviews which are given by the user. The convolutional neural network is used to collect without any loss of data. The transfer learning techniques will match the words using sentiment analysis and give the count of the recommendation and de-recommendations [16–20].

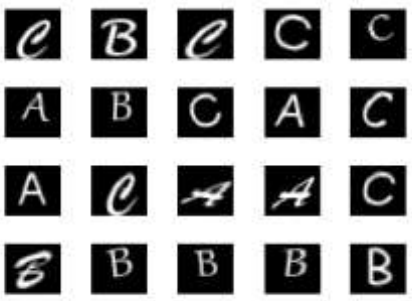

Fig. 3: *Transfer Learning Techniques.*

PROPOSED SYSTEM

In this project more advanced deep learning models such as Convolutional Neural Networks can be explored for feature learning. Using classification task, the necessary data can be collected from the sufficient training data in another domain of interest, where the latter data may be in a different feature space or follow a different data distribution. In such cases, knowledge transfer, if done successfully, would greatly improve the performance of learning by avoiding much expensive data-labelling efforts. Transfer learning is used to solve these kinds of problems. In this, ecommerce is posted many advertisements in social media websites. The advertisement which is posted [21–24].

In social media cannot be known to user. If they buy that product the customer will getdissatisfaction. So we are collecting the reviews from the friends and friends of friends in social media sites and then based on the positive and negative reviews we suggest all those reviews and the recommend and de-recommends the products.

AUTHORIZATION

The process of logging in all social media websites, authorization is important. In this module, user need to register into facebook before viewing the profile. The registered user can logging into facebook using username and password. When the username and password are correct the user can login into facebook and give the reviews based on the products. When the username and password was incorrect user need to check for the particular credentials and then log into facebook.

Fig. 4: *Authorisation.*

Creation of User Contour

A profile refers therefore to the explicit digital representation of a person's identity. In a Windows environment, a user profile is a record of user-specific data that define the user's working environment. The record can include display settings, application settings, and network connections. A user profile is a collection of properties that describes a single user, and also the policies and other settings associated with each property. The user who is described by a profile is represented by a unique identifier in the profile, and the remaining properties provide information about that user, such as the user's phone numbers, friend requests, post status, and so on.

Fig. 5: *User Profile.*

Appraisal of the Product

In this module, the various advertisements will be posted in the facebook by the ecommerce. In this system, collecting the reviews for the products from the friends or friends of friends from the facebook.

Fig. 6: *Post the Reviews.*

An expert review usually refers to a review written by someone who has tested several peer products or services to identify which offers the best value for money or the best set of feature. The reviews can be posted by the friends or friends of friends of the users.

Recommending the Product

In this collecting the reviews from various domains by using convolutional neural network.The reviews can be either positive or it can be negative all those reviews are collected and stored in facebook database. And then conclude that which product is good and then recommend the product to the user to get product efficiently and time saving. The product recommendation is done on this module through the social media.

Fig. 7: *Recommendation.*

Architecture

The user will login into social websites such as facebook, twitter etc. After login into facebook there are so many ads posted in the timeline. The need to give reviews or comments based on their products. The reviews will be collected based on the users or friends of friends. And then we conclude the count of the reviews by separately positive and negative comments and the recommend the products to the user.

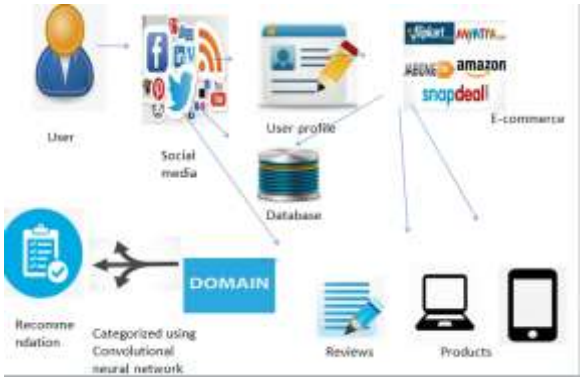

Fig. 8: *System Architecture.*

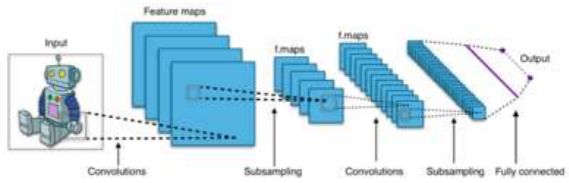

Fig. 9: *Typical CNN Architecture.*

RESULTS AND DISCUSSION

Mostly 90% of the user accessing the social media. From this, only 50% of the user is interested to buy the product because of the reviews given by the e-commerce. By proposing this system, 70-80% of user will be interested to buy the product by viewing the reviews posted by friends. The user will buy the product with full satisfaction. Collecting the reviews from the user and recommending to friends or friends of friends. Improving the current feature mapping method through ideas in transferring learning. More advanced deep learning models such as Convolutional Neural Networks can be explored for feature learning. Knowledge transfer done successfully, would greatly improve the performance of learning by avoiding much expensive data-labeling efforts.

Fig. 10: *Sequential Growth.*

CONCLUSION

The sentiment analysis or opinion mining is a field of study that analyzes people's sentiments, attitudes, or emotions towards certain entities. The products reviews will be posted by the friends or friends of friends of the user. So that the user can trust the friends' reviews and can decide to buy the products by viewing the recommendations and derecommendations.

FUTURE ENHANCEMENT

Improving the current feature mapping method through ideas in transfer learning feature requests, user experiences, and ratings in future. The company can itself view the reviews and make out the product according to the user's view and satisfaction. The customer's expectation

can be identified through the proposed system. In future, various cloud can be combined and improve the quality of the product efficiently.

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