

AMAZON RECOMMENDATION SYSTEM USING MACHINE LEARNING

Submitted in partial fulfillment of the requirements for the award of
Bachelor of Engineering degree in Computer Science and
Engineering

by

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**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
SCHOOL OF COMPUTING**

SATHYABAMA
INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)

Accredited with Grade "A" by NAAC | 12B Status by UGC | Approved by AICTE

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BONAFIDE CERTIFICATE

This is to certify that this project report is the bonafide work of **MEENA.D (37110445)** and **NIVETHA.N (37110520)** who carried out the project entitled "**AMAZON RECOMMENDATION SYSTEM USING MACHINE LEARNING**" under my

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DECLARATION

I **Meena D** hereby declare that the Project Report entitled “Sign Language Recognition” done by me under the guidance of **Dr.Mercy paul selvan.,Ph.D.**, Department of Computer Science and Engineering at Sathyabama Institute of Science and Technology is submitted in partial fulfillment of the requirements for the award of the Bachelor of Engineering degree in Computer Science.

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ABSTRACT

AmazonRep was created as a result of my efforts By mining product feedback and attributes, Amazon consumers can use a name system to help them make buying decisions. Unlike current name systems, which use review time, sentiment orientation, and helpfulness votes to create and imagine names for a variety of e-commerce items (movies, goods, hotels, services, etc.), no matter vital factors like user quality, our system in the main specialize in considering Throughout the name generation and visualisation process, these variables (user reputation, review sentiment orientation, review helpfulness votes, review time) are taken into account. The results of an associate degree study of thirteen Amazon items (books, television, laptops, smartphones, video games, refrigerators, and washing machines) show that the system under consideration is useful in the creation of and storing data and imagining name.

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CHAPTER 1

INTRODUCTION

MACHINE LEARNING

Machine learning is an application of artificial intelligence (AI) that provides systems the ability to automatically learn and improve from experience without being explicitly programmed. Machine learning focuses on the development of computer programs that can access data and use it learn for themselves. The process of learning begins with observations or data, such as examples, direct experience, or instruction, in order to look for patterns in data and make better decisions in the future based on the examples that we provide. The primary aim is to allow the computers learn automatically without human intervention or assistance and adjust actions accordingly.

MACHINE LEARNING METHODS

Machine learning algorithms are often categorized as supervised or unsupervised. Supervised machine learning algorithms can apply what has been learned in the past to new data using labeled examples to predict future events. Starting from the analysis of a known training dataset, the learning algorithm produces an inferred function to make predictions about the output values. The system is able to provide targets for any new input after sufficient training. The learning algorithm can also compare its output with the correct, intended output and find errors in order to modify the model accordingly.

In contrast, unsupervised machine learning algorithms are used when the information used to train is neither classified nor labeled. Unsupervised learning studies how systems can infer a function to describe a hidden structure from unlabeled data. The system doesn't figure out the right output, but it explores the data and can draw inferences from datasets to describe hidden structures from unlabeled data.

Semi-supervised machine learning algorithms fall somewhere in between supervised and unsupervised learning, since they use both labeled and unlabeled data for training –

typically a small amount of labeled data and a large amount of unlabeled data. The

systems that use this method are able to considerably improve learning accuracy. Usually, semi-supervised learning is chosen when the acquired labeled data requires skilled and relevant resources in order to train it / learn from it. Otherwise, acquiring unlabeled data generally doesn't require additional resources.

Reinforcement machine learning algorithms is a learning method that interacts with its environment by producing actions and discovers errors or rewards. Trial and error search and delayed reward are the most relevant characteristics of reinforcement learning. This method allows machines and software agents to automatically determine the ideal behavior within a specific context in order to maximize its performance. Simple reward feedback is required for the agent to learn which action is best; this is known as the reinforcement signal.

ADVANTAGES OF MACHINE LEARNING:

Machine Learning undoubtedly helps people to work more creatively and efficiently. Basically, you too can delegate quite complex or monotonous work to the computer through Machine Learning - starting with scanning, saving and filing paper documents such as invoices up to organizing and editing images.

In addition to these rather simple tasks, self-learning machines can also perform complex tasks. These include, for example, the recognition of error patterns. This is a major advantage, especially in areas such as the manufacturing industry: the industry relies on continuous and error-free production. While even experts often cannot be sure where and by which correlation a production error in a plant fleet arises, Machine Learning offers the possibility to identify the error early this saves down times and money. Self-learning programs are now also used in the medical field. In the future, after "consuming" huge amounts of data (medical publications, studies, etc.), apps will be able to warn a in case his doctor wants to prescribe a drug that he cannot tolerate. This "knowledge" also means that the app can propose alternative options which for example also take into account the genetic requirements of the respective patient.

INTRODUCTION OF THE PROJECT:

People search for products eagerly to buy good product. This is due to enormous production of large number of products in the world. Their decision to choose a product highly depends on word-of-mouth. Customers greatly observe the views of different people to make decisions. For this, new system emerged called Recommender systems (RS).

They help people to get products of their interest. Many people perform more search operation to choose right products. Many people don't know the right way to get products of their interest. Recommender Systems helps consumer to choose the product among so many options. RS finds relevant items from number of attentions. It has a high commercial value.

This has been used by popular website like Amazon.com, Netflix, Movie lens and Facebook etc. It provides personalized recommendations to users. Firms adopt these systems to increase benefits of the company. Companies can explain their popularity at online sites (web sites). These systems analyze databases of customer interactions with the web and produce useful recommendations.

Data is usually in the form of purchase information (i.e., what items customer has purchased), ratings given by user, purchase behavior of other customers etc. This makes recommender system to help in Ecommerce sites use this system to attract customer to earn benefits. Their work is .. Customers can sit from their workplace and can get whatever products they want. They can use electronic modes for that. They approach some websites and search for products. E-Commerce sites give a pool of resources for the customer to choose . Customers select products and pay the amount through their cards such credit cards RS gives good recommendations to users or customers.

These recommendations are used in E-commerce for the customers to choose best or right products to which they are interested . By implementing RS in E-commerce sites people will know more products related to their area of search. This will lead to more persons approaching the web sites. They give personalized recommendations to users. It allows users to weed out items which they want from huge set of choices. These

personalized recommendations gather high importance since it allows user to get items from variety of products without loss in their taste.

Chapter 2

AIM AND SCOPE OF THE PROJECT

AIM:

Our aim is to create a web application to make the product reach to the client based on the rating.

OBJECTIVE:

our project objectives product recommendation system & rating ranking-It is liable for a particular standard for sorting objects. The most common function of this sort is the returning websites of the search engine that satisfies the user's request.

SCOPE:

Explanations are ubiquitous in real-world recommender systems. For example, Amazon uses explanations like “frequently bought together”, and “customers who bought this item also bought”, while Netflix presents different lists of recommendations where each list is driven by a different reason.

Chapter 3

SYSTEM DESIGN & METHODOLOGY

EXISTING SYSTEM:

In previous work, they just developed a web application of an ecommerce products without any recommendation part to the buyers. And also in previously 10%–15% reviews are essentially echoing the earliest reviews, and thus, a misleading early review has an even higher influential potential.

PROPOSED SYSTEM:

Sentiment classification aims to determine the overall intention of a written text which can be of admiration or criticism type. This can be achieved by using machine learning algorithms. So, the problem that is going to be investigated in the project is as follow: which machine learning approach performs better in terms of accuracy on the amazon beauty products reviews.

ADVANTAGES AND DISADVANTAGES:

Advanatages:

- Our project objectives product recommendation system & rating.
- Filtering fake and unauthorized user ratings from the website
- Ranking-it is liable for a particular standard for sorting objects.
- The most common function of this sort is the returning websites of the search engine that satisfies the user's request.

Disadvantages:

Recommendation part is no done

MODULE DESCRIPTION:

Register:

- User register the website like name, username, password & re-enter password.
- Password must be 8 character
- Password must capital & small letter & numerical

Login:

Once registered completed the user login the valid username & password. Once not enter the valid the msg displayed.” invalid username & password”

Displaying product

Displaying product like recommendation systems. Recommending rating like 5,4, upto 1.Display the product like rating, price, product_id, description etc.

Ratings:

Once user enter the login they will give rating to products. Once user gives rating, the product will be increased or decreased as per user concern.

FILTERING FAKE REVIEW:

It's used to distinguish between false and genuine reviews. This makes it simple for the user to locate a genuine product.

Add to cart:

We booked the product & payments will be done.

Results:

- Customer review rating (valence)
- The accumulated average numeric rating of inline review
- Number of customer reviews (volume)
- Percentage of negative review

The proportion of 1-star and 2-star reviews in total reviews

- Percentage of neutral review

The proportion of 3-star reviews in total reviews

- Percentage of positive review

The proportion of 4-star and 5-star reviews in total reviews

ALGORITHM:

Content-based Filtering:

Content-based filtering uses item features to recommend other items similar to what the user likes, based on their previous actions or explicit feedback.

To demonstrate content-based filtering, let's hand-engineer some features for the Google Play store. The following figure shows a feature matrix where each row represents an app and each column represents a feature. Features could include categories (such as Education, Casual, Health), the publisher of the app, and many others. To simplify, assume this feature matrix is binary: a non-zero value means the has that feature.

You also represent the user in the same feature space. Some of the user-related features could be explicitly provided by the user. For example, a user selects "Entertainment apps" in their profile. Other features can be implicit, based on the apps they have previously installed. For example, the user installed another app published by Science R Us.

The model should recommend items relevant to this user. To do so, you must first pick a similarity metric (for example, dot product). Then, you must set up the system to score each candidate item according to this similarity metric. Note that the recommendations are

specific to this user, as the model did not use any information about other users.

Filtering system for collaboration:

Collaborative filtering systems work by aggregating user feedback in the form of ratings for items in a very particular field and exploiting rating behaviour correlations between a large number of users in an important way to promote an object. cooperative filtering systems advocate Associate in Nursing item to a user supported opinions of different users. Like, in a very show recommendation application, cooperative filtering devices are in favour Assign a nursing item to a person who supports the views of other people. In a display recommendation app, for example, the cooperative filtering mechanism seeks to find different like users and then recommends the films that they like the most. Despite the fact that there are several cooperative filtering methods, they'll be split into two categories classes (15):

- Approaches that are focused on memory
- Approaches that are based on models

1) Approaches that are focused on memory - related strategies evaluate all consumer or item information indefinitely to quantify recommendations and can be divided into the following categories: Content-Based (CB) techniques, CF techniques, and hybrid techniques are all available. Stuff that were used by similar users in the past are advocated by CF techniques. They make recommendations based on social, community-generated data (e.g., user behaviour like ratings or implicit histories). CB techniques promote items that were previously common among learners; they focus their suggestions on individual data and disregard the offerings of other users. Hybrid techniques combine different techniques to provide more accurate recommendations. A hybrid RS might incorporate both CF (or social-based) and CB (or information-based) techniques. If no cost information is available to support CF techniques, it will turn to a CB technique [17]. Figure 1 is a schematic of RS [17] is mainly memory-based. In memory-based CF, there are three steps to the prediction process. They are similarity analysis, neighbourhood generation, and score prediction. The CF framework considers the mean absolute error (MAE), exactness, and recall when analysing results. The CF

output varies according to each step's method technique[17].

2) Approaches that are based on models - A theoretical model of user rating behaviour is proposed based on CF algorithms. Instead of simply using raw rating information to make predictions, the model's parameters can be calculated from consumer rating knowledge, and hence the model is used to make predictions. Several model-based CF algorithms have been investigated in recent years. For example, considers two probabilistic models: clump and Bayesian networks. As compared to random partitioning, four partitioning-based clump algorithms are used to construct predictions, resulting in higher measurability and accuracy[7].

Naive bayes algorithm:

For identifying genuine(T) and fake(F) reviews across a wide range of data sets, Nave Bayes [7] and Decision Tree Classifier are used. The ratio of is used to determine the probability of each term (sum of frequency of each word of a class to the total words for that class).

3.5.4. NLP Techniques:

Machine learning algorithms are commonly used in NLP algorithms. Instead of manually coding large sets of rules, NLP can use machine learning to learn these rules automatically by evaluating a set of examples (e.g., a large corpus, such as a book, and breaking it down into a collection of sentences) and making a statistical inference.

REQUIREMENT SPECIFICCATION:

Hardware requirements:

The most common set of requirements defined by any operating system or software application is the physical computer resources, also known as hardware. The minimal

hardware requirements are as follows,

Processor : Pentium IV

RAM	: 8 GB
Processor	: 2.4 GHz
Main Memory	: 8GB RAM
Hard Disk Drive	: 1tb
Keyboard	: 104 Keys

Software requirements:

Software requirements deals with defining resource requirements and prerequisites that needs to be installed on a computer to provide functioning of an application. The minimal software requirements are as follows,

Front end	: python
Database	: sql/csv
IDE	: anaconda
Operating System	: Windows 10

CHAPTER 4

SOFTWARE DEVELOPMENT METHODOLOGY

ARCHITECHTURE DIAGRAM:

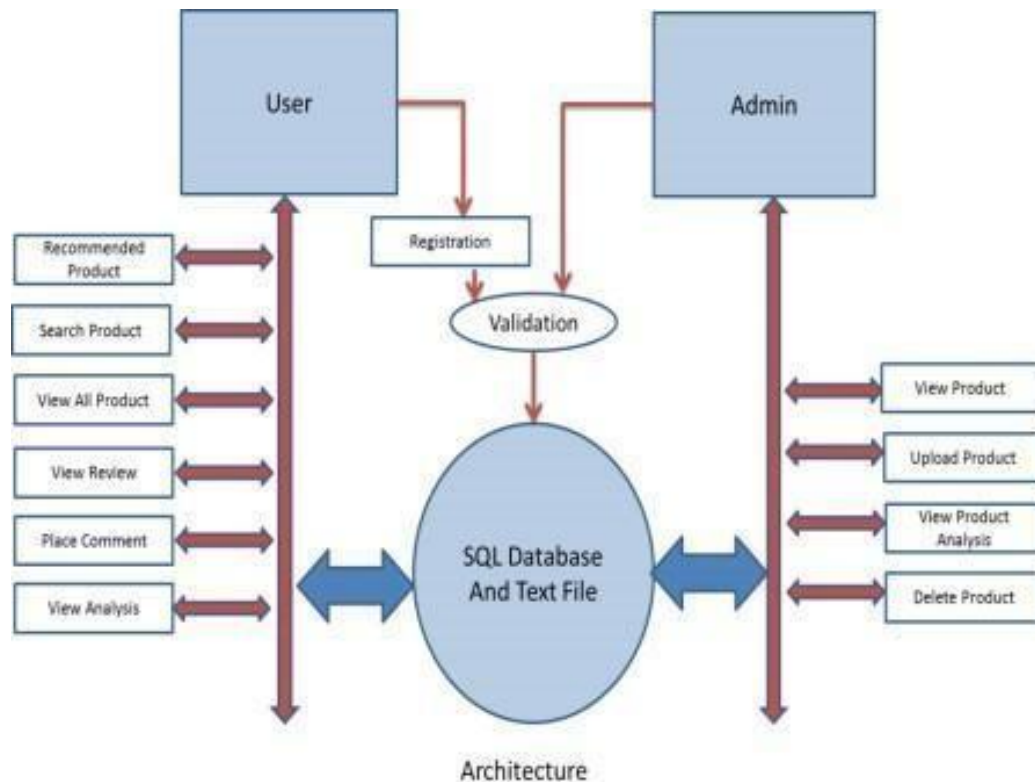


Fig 4.1: Architechture diagram

User:

The user module allows users to register, log in, and log out. Users benefit from being able to sign on because this associates content they create with their account and allows various permissions to be set for their roles.

The user module supports user roles, which can be set up with fine-grained permissions allowing each role to do only what the administrator permits. Each user is assigned one or more roles. By default there are three roles: anonymous (a user who has not logged in)

and authenticated (a user who is registered), and administrator (a signed in user who will be assigned site administrator permissions).

Users can use their own name or handle and can fine tune some personal configuration settings through their individual my account page. Registered users need to authenticate by supplying their username and password, or alternately an OpenID login.

A visitor accessing your website is assigned a unique ID, the so-called session ID, which is stored in a cookie. For security's sake, the cookie does not contain personal information but acts as a key to retrieving the information stored on your server.

Admin:

Admin module allows system administrator to set up back-end of the system and perform basic system configuration, mainly definition of predefined drop-down fields, definition of classes time schedule, etc. All the new packages and promo bundles as well as new prices and price types for classes, new subjects offered, etc. are defined here.

Part of the admin set up is users management which allows users to be set up with definable access level/roles, access to a single or multiple branches. Admin can also set up overall system security settings such as required password strength, inactive session time out, inactive accounts lock out, password reset period, etc. Important part of security is audit log – any changes in the system are logged here – so it's easy to check who changed/removed what, at what time, what was the original value and what is the new value set.

Admin major role in our project is to view, update products, View product analysis, Delete product.

Database:

A database is a collection of information that is organized so that it can be easily accessed, managed and updated. Computer databases typically contain aggregations of data records or files, containing information about sales transactions or interactions with specific customers. The SQL database will maintain the user details, the cart details and the product details.

LANGUAGE DESCRIPTION

About Python Language

Python is an object-oriented programming language created by Guido Rossum in 1989. It is ideally designed for rapid prototyping of complex applications. It has interfaces to many OS system calls and libraries and is extensible to C or C++. Many large companies use the Python programming language include NASA, Google, YouTube, BitTorrent, etc. Python programming is widely used in Artificial Intelligence, Natural Language Generation, Neural Networks and other advanced fields of Computer Science. Python had deep focus on code readability & this class will teach you python from basics.

Python Programming Characteristics

It provides rich data types and easier to read syntax than any other programming languages

It is a platform independent scripted language with full access to operating system API's

Compared to other programming languages, it allows more run-time flexibility

It includes the basic text manipulation facilities of Perl and Awk

A module in Python may have one or more classes and free functions

Libraries in Python are cross-platform compatible with Linux, Macintosh, and Windows

For building large applications, Python can be compiled to byte-code

Python supports functional and structured programming as well as OOP

It supports interactive mode that allows interacting Testing and debugging of snippets of code

In Python, since there is no compilation step, editing, debugging and testing is fast.

Applications of Python Programming

Web Applications

You can create scalable Web Apps using frameworks and CMS (Content Management System) that are built on Python. Some of the popular platforms for creating Web Apps are: Django, Flask, Pyramid, Plone, Django CMS. Sites like Mozilla, Reddit, Instagram and PBS are written in Python.

Scientific and Numeric Computing

There are numerous libraries available in Python for scientific and numeric computing.

There are libraries like: SciPy and NumPy that are used in general purpose computing. And, there are specific libraries like: EarthPy for earth science, AstroPy for Astronomy and

so on. Also, the language is heavily used in machine learning, data mining and deep learning.

Creating software Prototypes

Python is slow compared to compiled languages like C++ and Java. It might not be a good choice if resources are limited and efficiency is a must. However, Python is a great language for creating prototypes. For example: You can use Pygame (library for creating games) to create your game's prototype first. If you like the prototype, you can use language like C++ to create the actual game.

Good Language to Teach Programming

Python is used by many companies to teach programming to kids and newbies. It is a good language with a lot of features and capabilities. Yet, it's one of the easiest language to learn because of its simple easy-to-use syntax.

Python GUI Tkinter

Python offers multiple options for developing GUI (Graphical User Interface). Out of all the GUI methods, tkinter is the most commonly used method. It is a standard Python interface to the Tk GUI toolkit shipped with Python. Python with tkinter is the fastest and easiest way to create the GUI applications. Creating a GUI using tkinter is an easy task. To create a tkinter app:

Importing the module – tkinter

Create the main window (container)

Add any number of widgets to the main window

Apply the event Trigger on the widgets.

Importing tkinter is same as importing any other module in the Python code. Note that the name of the module in Python 2.x is 'Tkinter' and in Python 3.x it is 'tkinter'.

tkinter also offers access to the geometric configuration of the widgets which can organize the widgets in the parent windows. There are mainly three geometry manager classes class.

pack() method: It organizes the widgets in blocks before placing in the parent widget.

grid() method: It organizes the widgets in grid (table-like structure) before placing in the parent widget.

`place()` method: It organizes the widgets by placing them on specific positions directed by the programmer.

About Opencv Package

Python is a general purpose programming language started by Guido van Rossum, which became very popular in short time mainly because of its simplicity and code readability. It enables the programmer to express his ideas in fewer lines of code without reducing any readability.

Compared to other languages like C/C++, Python is slower. But another important feature of Python is that it can be easily extended with C/C++. This feature helps us to write computationally intensive codes in C/C++ and create a Python wrapper for it so that we can use these wrappers as Python modules. This gives us two advantages: first, our code is as fast as original C/C++ code (since it is the actual C++ code working in background) and second, it is very easy to code in Python. This is how OpenCV-Python works, it is a Python wrapper around original C++ implementation.

And the support of Numpy makes the task more easier. Numpy is a highly optimized library for numerical operations. It gives a MATLAB-style syntax. All the OpenCV array structures are converted to-and-from Numpy arrays. So whatever operations you can do in Numpy, you can combine it with OpenCV, which increases number of weapons in your arsenal. Besides that, several other libraries like SciPy, Matplotlib which supports Numpy can be used with this.

So OpenCV-Python is an appropriate tool for fast prototyping of computer vision problems.

FEATURES OF ANACONDA NAVIGATOR

Anaconda

Anaconda is a free and open source, easy to install distribution of Python and R programming languages. Anaconda provides a working environment which is used for scientific computing, data science, statistical analysis and machine learning.

The latest distribution of Anaconda is Anaconda 5.3 and is released in October, 2018. It has the conda package, environment manager and a collection of 1000+ open source packages long with free community support.

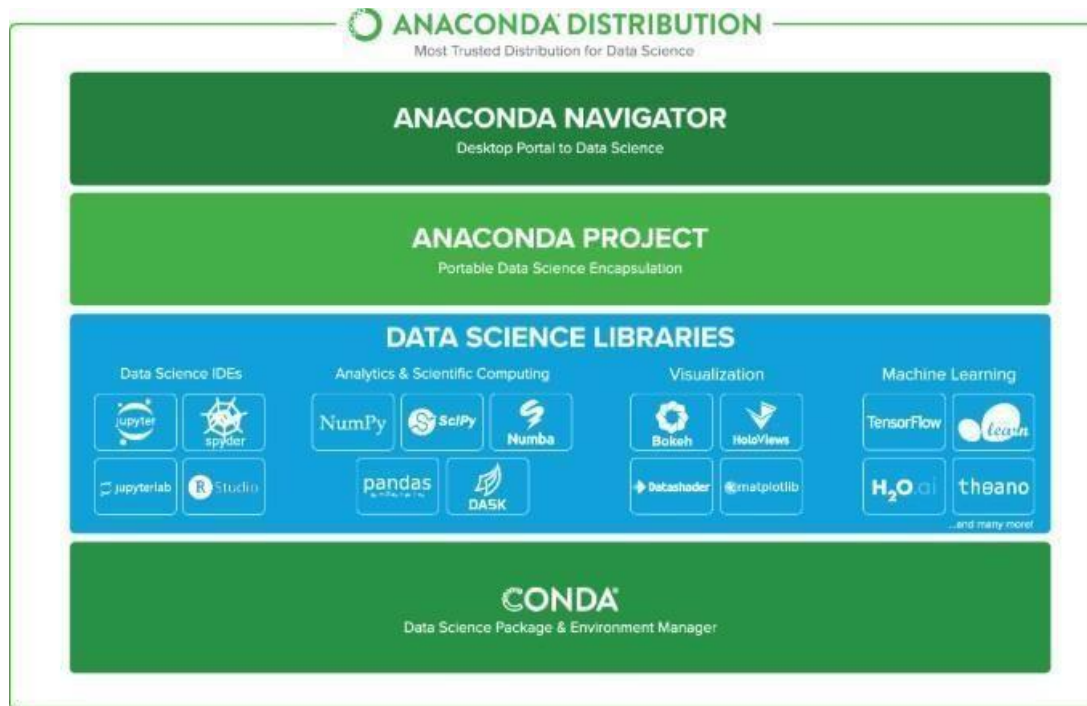
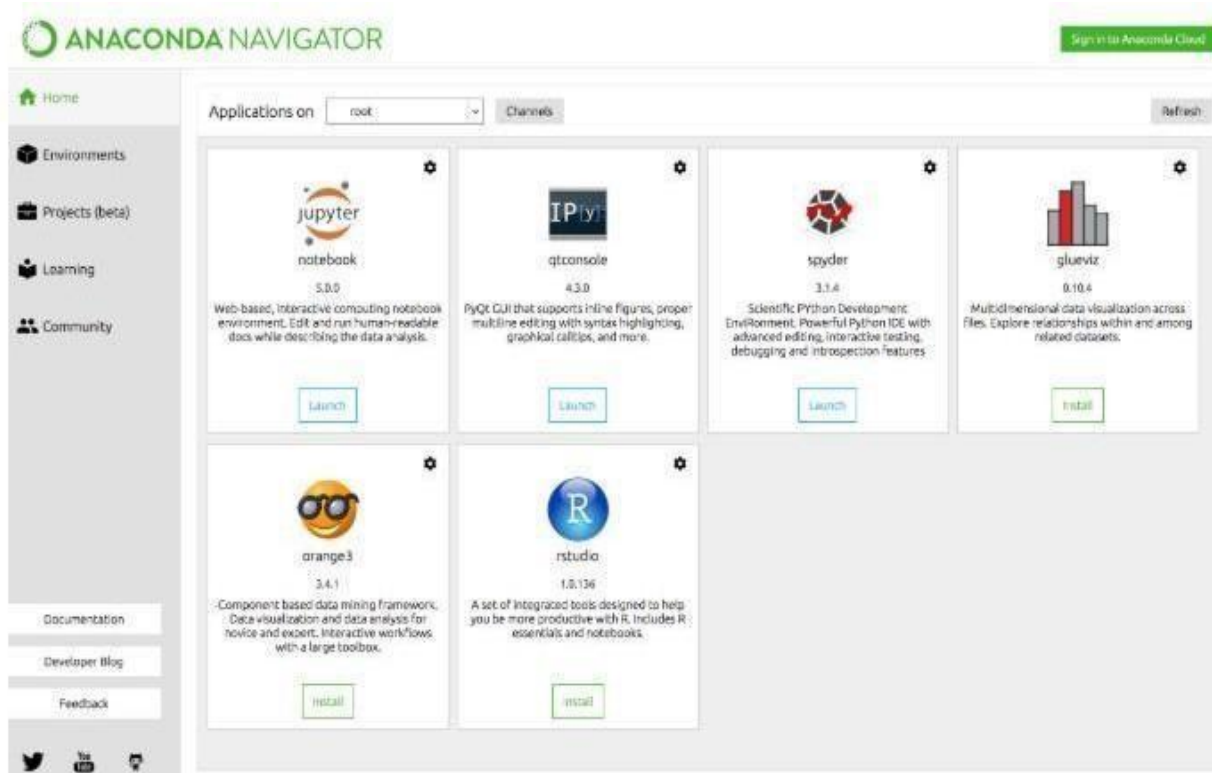


Fig 4.3: Anaconda distribution

What is Anaconda Navigator?

Anaconda Navigator is a desktop graphical user interface (GUI) included in the Anaconda distribution. It allows us to launch applications provided in the Anaconda distribution and easily manage conda packages, environments and channels without the use of command-line commands. It is available for Windows, macOS and Linux.



Anaconda Navigator

Fig 4.4: Anaconda navigator

Applications Provided In Anaconda Distribution

The Anaconda distribution comes with the following applications along with Anaconda Navigator.

JupyterLab

Jupyter Notebook

Qt Console

Spyder

Glueviz

Orange3

RStudio

Visual Studio Code

> JupyterLab: This is an extensible working environment for interactive and reproducible computing, based on the Jupyter Notebook and Architecture.

>Jupyter Notebook: This is a web-based, interactive computing notebook environment. We can edit and run human-readable docs while describing the data analysis.

> Qt Console: It is the PyQt GUI that supports inline figures, proper multiline editing with syntax highlighting, graphical calltips and more.

> Spyder: Spyder is a scientific Python Development Environment. It is a powerful Python IDE with advanced editing, interactive testing, debugging and introspection features.

> VS Code: It is a streamlined code editor with support for development operations like debugging, task running and version control.

> Glueviz: This is used for multidimensional data visualization across files. It explores relationships within and among related datasets.

>Orange 3: It is a component-based data mining framework. This can be used for data visualization and data analysis. The workflows in Orange 3 are very interactive and provide a large toolbox.

>Rstudio: It is a set of integrated tools designed to help you be more productive with R. It includes R essentials and notebooks.

New Features of Anaconda 5.3



Compiled with Latest Python release: Anaconda 5.3 is compiled with Python 3.7, taking advantage of Python's speed and feature improvements.

- Better Reliability: The reliability of Anaconda has been improved in the latest release by capturing and storing the package metadata for installed packages.
- Enhanced CPU Performance: The Intel Math Kernel Library 2019 for Deep Neural Networks(MKL 2019) has been introduced in Anaconda 5.3 distribution. Users deploying Tensorflow can make use of MKL 2019 for Deep Neural Networks. These Python binary packages are provided to achieve high CPU performance.
- New packages are added: There are over 230 packages which has been updated and added in the new release.
- Work in Progress: There is a casting bug in Numpy with Python 3.7 but the team is currently working on patching it until Numpy is updated.

CHAPTER 5

RESULTS AND DISCUSSION



The image shows a login interface. At the top, the word "Login" is centered. Below it is a form with two input fields: "Email address" and "Password". Below the form is a blue button with the text "Log in".

Fig 5.1: LOGIN PAGE

A login is a set of credentials used to authenticate a user. Most often, these consist of a username and password. However, a login may include other information, such as a PIN number, passcode, or passphrase. Logins are used by websites, computer applications, and mobile apps. They are a security measure designed to prevent unauthorized access to confidential data. When a login fails (i.e, the username and password combination does not match a user account), the user is disallowed access. Many systems block users from even trying to log in after multiple failed login attempts.

The image shows a web form titled "Register an account". It contains four input fields stacked vertically: "Email address", "Username", "Password", and "Confirm password". Below these fields is a large blue button labeled "Register". The form is set against a light yellow background.

Fig 5.2: REGISTER PAGE

User register the website like name, username, password & re-enter password. Password must be 8 character Password must capital & small letter & numerical

A **registered user** is a [user](#) of a [website](#), [program](#), or other system who has previously *registered*. Registered users normally provide some sort of [credentials](#) (such as a username or e-mail address, and a password) to the system in order to prove their identity: this is known as [logging in](#). Systems intended for use by the general public often allow any user to register simply by selecting a *register* or *sign up* function and providing these credentials for the first time. Registered users may be granted privileges beyond those granted to unregistered users.

High Rated Product



Gadgets Appliances Men's Slim...
Price - 699.0 Rating - 4.0



Nidhi Sequence Men's Rayon Co...
Price - 678.0 Rating - 4.0

Fig 5.3: DISPLAYING PRODUCT

Displaying product like recommendation systems. Recommending rating like 5,4, upto 1. Display the product like rating, price, product_id, description etc.

Press **F11** to exit full screen

Review

its a very very very ood product with accurate value
Fake admin

its a very very very good product with accurate value
Fake admin

its a very accurate very good product with accurate value
Real admin

its a very accurate very good product with accurate value
Real admin

its a very accurate very good product with accurate value
Real admin

its a very accurate very good product with accurate value
Real admin

its a very accurate very good product with accurate value
Real admin

Fig 5.4: FILTERING FAKE REVIEW

Here's an example of someone on Twitter begging for reviews, and offering free items in return:

【US ONLY】
Hi, everyone
i need US reviews,SSD Product
100% PP refund after review
Please PM me if you are interested [#amazonreview](#)

Whenever I see a review that reflects that level of grammar, I move on to the next product. If a product can't earn enough legitimate reviews from real users, I'm left wondering what's wrong with it -- there has to be something actual customers have to say they don't want me to know!

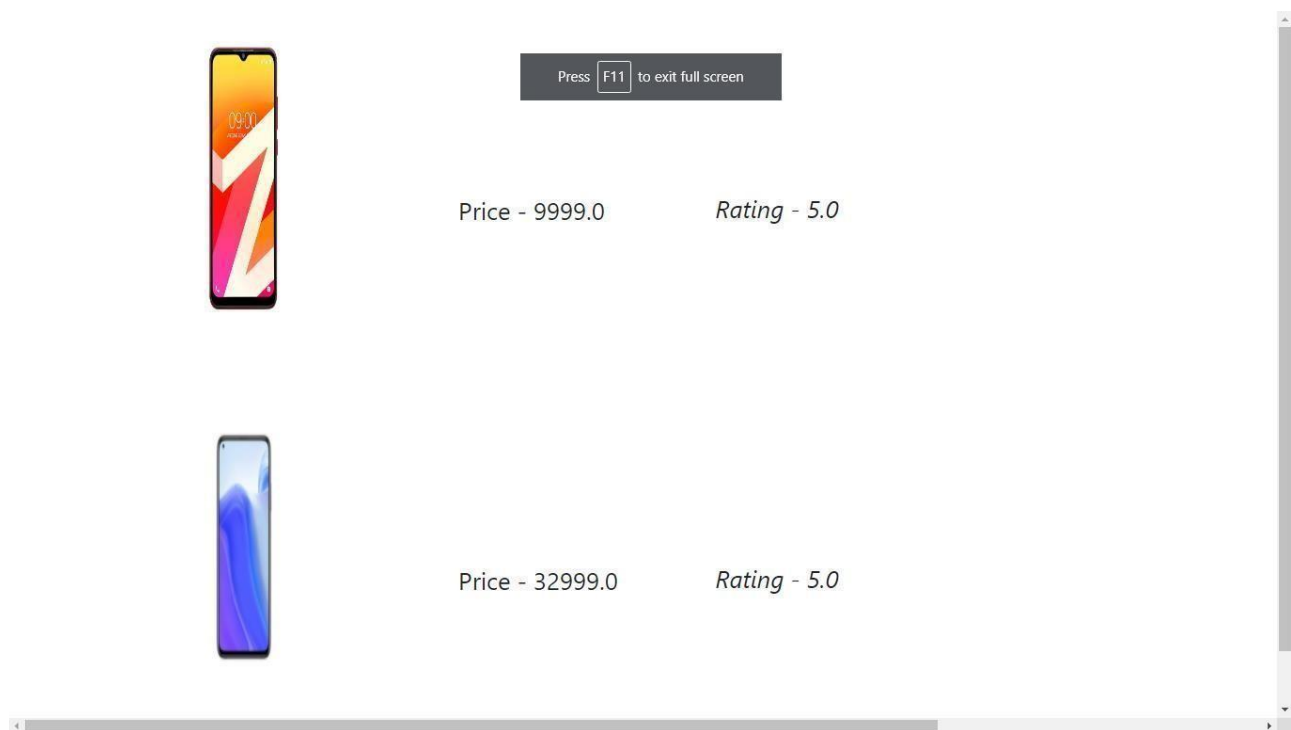


Fig 5.5: RATINGS

CHAPTER 6

CONCLUSION AND FUTURE WORK

CONCLUSION:

Recommender Systems have been widely used to exhibit the most appropriate items to users given their past consumption preferences. Recommendation systems are achieving great success in e-Commerce applications, during a live interaction with a customer; recommendation system may apply different techniques to solve the problem of making a correct and relevant product recommendation. Deep learning techniques with different neural network architectures can be applied to the recommendation systems to identify the different patterns and behaviours of the customers in e-commerce applications. The recommended collaborative filtering recommendation (CF) by analysing existing user behaviours and information is widely used in the industry. In this paper, a revised recommendation system is constructed that ensembles deep neural network. This paper proposes a new deep learning-based framework for augmenting the collaborative-filtering based recommendation systems. In future, this model for explicit feedback will be revised changing the number of latent factors for user and item embedding and performance of the model will be reviewed.

FUTURE ENHANCEMENT:

Improve your recommendations by rating your purchased items, or by excluding certain purchases from being considered in your recommendations, for example, gifts you purchased.

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APPENDIX

A.PLAGIARISM REPORT

amazon recommendation system			
ORIGINALITY REPORT			
13%	9%	8%	6%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS
PRIMARY SOURCES			
1	irjet.net Internet Source		4%
2	www.ijert.org Internet Source		1%
3	Submitted to California State University, Sacramento Student Paper		1%
4	www.irjet.net Internet Source		1%
5	Recommender Systems Handbook, 2015. Publication		1%
6	Liu, Jing, Yu Jiang, Zechao Li, Xi Zhang, and Hanqing Lu. "Domain-Sensitive Recommendation with User-Item Subgroup Analysis", IEEE Transactions on Knowledge and Data Engineering, 2015. Publication		1%
7	Submitted to Universiti Teknologi MARA Student Paper		1%
8	Babak Maleki Shoja, Nasseh Tabrizi. "Customer Reviews Analysis With Deep Neural Networks for E-Commerce Recommender Systems", IEEE Access, 2019 Publication		1%
9	Submitted to Indian Institute of Technology, Madras Student Paper		1%

AMAZON RECOMMENDATION SYSTEM USING MACHINE LEARNING

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Abstract - AmazonRep was created as a result of my efforts. By mining product feedback and attributes, Amazon consumers can use a name system to help them make buying decisions. Unlike current name systems, which use review time, sentiment orientation, and helpfulness votes to create and imagine names for a variety of e-commerce items (movies, goods, hotels, services, etc.), no matter vital factors like user quality, our system in the main specializes in considering. Throughout the name generation and visualisation process, these variables (user reputation, review sentiment orientation, review helpfulness votes, review time) are taken into account. The results of an associate degree study of thirteen Amazon items (books, television, laptops, smartphones, video games, refrigerators, and washing machines) show that the system under consideration is useful in the creation of and storing data and imagining name.

Keywords: Amazon rating, Machine Learning, Content based filtering algorithm.

1. INTRODUCTION

People seek for merchandise thirstily to shop for smart product. This can be because of monumental production of enormous range of merchandise within the world. Their call to settle on a product extremely depends on spoken. Customers greatly observe the views of various folks to form choices. For this, new system emerged known as Recommender systems (RS). They assist folks to induce merchandise of their interest. Many folks perform additional search operation to settle on right merchandise. Many folks don't grasp the correct thanks to get merchandise of their interest. Recommender Systems helps client to settle on the merchandise among such a big amount of choices. RS finds relevant things from range of attentions. It's a high industrial

worth. This has been utilized by fashionable web site like Amazon.com, Netflix, pic lens and Facebook etc. It provides customized recommendations to users. Corporations adopt these systems to extend advantages of the corporate. Firms will make a case for their quality at on-line sites (web sites). These systems analyze

databases of client interactions with the net and manufacture helpful recommendations. information is sometimes within the sort of purchase info (i.e., what things client has purchased), ratings given by user, purchase behavior of alternative customers etc. This makes recommender system to assist in Ecommerce sites use this method to draw in client to earn advantages. Their work is .. Customers will sit from their work and might get no matter merchandise they need. they will use electronic modes for that. They approach some websites and seek for merchandise. E-Commerce sites provides a pool of resources for the client to settle on . Customers choose merchandise and pay the number through their cards such credit cardsRS offers smart recommendations to users or customers. These recommendations square measure utilized in E-commerce for the purchasers to settle on best or right merchandise to that they're interested . By implementing RS in E-commerce sites folks can grasp additional merchandise associated with their space of search. this can cause additional persons approaching the net sites. they provide customized recommendations to users. It permits users to remove things that they need from vast set of decisions. These customized recommendations gather high importance since it permits user to induce things from form of merchandise while not loss in their style.

2.BACKGROUND:

A number of methods have been taken accustomed make suggestions in the form of cooperative filtering, content primarily a hybrid and evidence- based approach There are numerous algorithms and approaches for providing recommendations based on rating or content information; however, cooperative filtering and content-based techniques have the same limitations. Several researchers have attempted to overcome these constraints by integrating any cooperative filtering and content- based technique available as a hybrid approach that incorporated both ratings and content

knowledge The recommendation framework would keep the search area active for researchers on a regular basis.

3.OBJECTIVE:

our project objectives product recommendation system & rating ranking-It is in command of a specific commonplace for sorting objects. the foremost common perform of this sort is that the returning websites of the pc programme that satisfies the user's request.

4.LITERATURE SURVEY:

1. metric weight unit Srinidhi Hiriyannaiah, Siddesh gramme Srinivasa, Devika Anil, Anagha Vembar, Srinidhi Hiriyannaiah, Devika Anil, Anagha Vembar, Srinidhi Hiriyannaiah, Srinidhi Hiriyannaiah, I'd like to introduce you to Srinivasa, IEEE Twenty-Fifth International Conference on High Performance Computing Workshops (HiPCW), December 2018. Srinivasa, Performance Analysis of Deep Learning Architectures for Recommendation Systems, IEEE Twenty-Fifth International Conference on High Performance Computing Workshops (HiPCW), December 2018.

Recommender systems area unit thought-about one in all the foremost common ways in which In recent years, personalization and online search have become trendy. The standard recommender framework has completely different requirements User interests or profile are examples of information that can be useful to users. Learning at a deeper level approaches combined with a The recommender method can produce useful results in a variety of situations. a variety of fields, including laptop vision, speech recognition, and language processing. Deep learning is essential for classifying complex data in order to enhance the understanding that can be gained from it. Deep learning is defined as learning that takes place over a long period of time. organised in depth. It's a brand-new area of research into machine learning that aids information different levels of modelling At a deeper level, it may be possible to discover interactions and links between various types of structured and unstructured data information, such as picture, sound, and text knowledge.

2. “A Result Review Analysisof Product Recommendation System in Domain

Sensitive Manner” Miss. Prof. Nitin R. Chopde, Mayuri G. Dabhade IRJET (International Review Volume: 07 Issue: 07 | e- ISSN: 2395-0056 July 2020 | Volume: 07 Issue: 07. With the large choice of merchandise and services accessible on the net, it's tough for users to decide on the merchandise or service that the majority meets their desires. so as to cut back or maybe eliminate this issue, recommender systems have emerged. A advocateer

system is employed in varied fields to recommend things of interest to users. one in all the most areas wherever this idea is presently used is e-commerce that interacts directly with customers by suggesting merchandise of interest with the aim of up its sales. impelled by the observation, a unique Domain-sensitive Recommendation (DsRec) algorithmic rule is planned, to form At the same time, we're looking into user-item subgroup analysis for rating forecasts. A website that includes a selection of similar items and a group of users who are interested in this subject is identified as a user-item subgroup. Cooperative Filtering (CF) is a popular and effective recommendation method. Unlike, CF methods make predictions solely based on user-item interaction data such as dealing history or item satisfaction expressed in ratings, as opposed to content-based recommender systems, which rely on user and thing profiles to make predictions. among other things.

3. Client IEEE Access, volume 7, September 2019. Product recommendations have a major Babak Maleki Shoja and Nasseh Tabrizi, Deep Neural Networks for E-Commerce Recommender Systems: A Review Analysis, impact on e-commerce companies like Amazon's sales. It's fair to believe that product reviews play a major The annual revenue generated by these e-Commerce companies plays an important role. suggestion for a product can be a broad term that encompasses several different aspects of user expectations, behaviour, preferences, interests, and so on. A person visiting an e-Commerce website, such as Amazon.com, in search of a particular product.

5. PROPOSED SYSTEM:

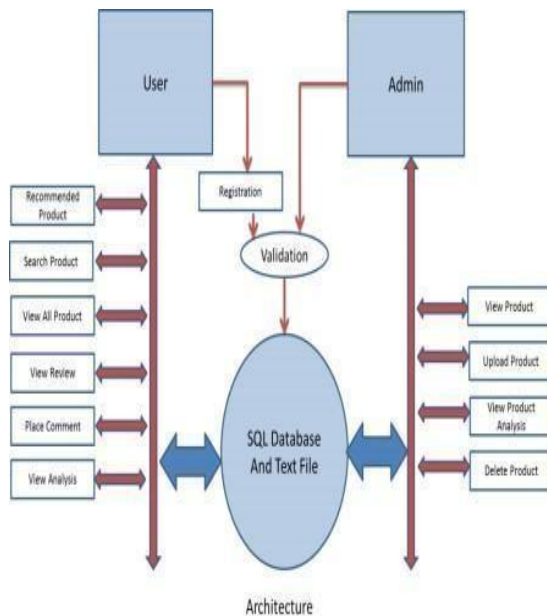
Proposed Approach:

Sentiment classification aims to see the intention of a written communication which may be of admiration or criticism kind. this will be achieved by victimisation machine learning algorithms. So, the matter that's getting to be investigated within the project is as follow: that machine learning approach performs higher in terms of accuracy on the amazon beauty product reviews.

Architechture:

matches this similarity metric. Since the model didn't use any information about alternative users, the suggestions are unique to the current user.

Filtering system for collaboration:



Algorithms:

Content-based Filtering:

Item options are used in content-based filtering to lobby for alternative items like what the user wants, to endorse their previous decisions, and to express feedback.

Let's hand-engineer some options for the Google Play store to illustrate content-based filtering. The following diagram depicts a function matrix in which each row represents an app and each column represents a feature. Groups (such as Education, Casual, and Health), the app's publisher, and a variety of other choices may be available. Assume that this function matrix is binary, and that a non-zero value indicates that the app has that feature.

Within the same function field, you also represent the user. The user may specifically have a variety of user-related choices. In their profile, a person, for example, selects "Entertainment apps." Alternative alternatives would be tacit, enabled by the applications that must be installed first. Another app printed by Science R U.S., for example, was entered by the user.

The model ought to advocate things relevant to the current user. To do so, you want to 1st choose a test of similarity (for example, dot product). Then you'll want to find a way to get any candidate item that

Collaborative filtering systems work by aggregating user feedback in the form of ratings for items in a very particular field and exploiting rating behaviour correlations between a large number of users in an important way to promote an object. cooperative filtering systems advocate Associate in Nursing item to a user supported opinions of different users. Like, in a very show recommendation application, cooperative filtering devices are in favour Assign a nursing item to a person who supports the views of other people. In a display recommendation app, for example, the cooperative filtering mechanism seeks to find different like users and then recommends the films that they like the most. Despite the fact that there are several cooperative filtering methods, they'll be split into two categories classes (15):

- Approaches that are focused on memory
- Approaches that are based on models

1) Approaches that are focused on memory - related strategies evaluate all consumer or item information indefinitely to quantify recommendations and can be divided into the following categories: Content-Based (CB) techniques, CF techniques, and hybrid techniques are all available. Stuff that were used by similar users in the past are advocated by CF techniques. They make recommendations based on social, community- generated data (e.g., user behaviour like ratings or implicit histories). CB techniques promote items that were previously common among learners; they focus their suggestions on individual data and disregard the offerings of other users. Hybrid techniques combine different techniques to provide more accurate recommendations. A hybrid RS might incorporate both CF (or social-based) and CB (or information-based) techniques. If no cost information is available to support CF techniques, it will turn to a CB technique [17]. Figure 1 is a schematic of RS [17] is mainly memory-based. In memory-based CF, there are three steps to the prediction process. They are similarity analysis, neighbourhood generation, and score prediction. The CF framework considers the mean absolute error (MAE), exactness, and recall when analysing results. The CF output varies according to each step's method technique[17].

2) Approaches that are based on models -

A theoretical model of user rating behaviour is proposed based on CF algorithms. Instead of simply using raw rating information to make predictions, the model's parameters can be

calculated from consumer rating knowledge, and hence the model is used to make predictions. Several model-based CF algorithms have been investigated in recent years. For example, considers two probabilistic models: clump and Bayesian networks. As compared to random partitioning, four partitioning-based clump algorithms are used to construct predictions, resulting in higher measurability and accuracy[7].

Naive bayes algorithm:

For identifying genuine(T) and fake(F) reviews across a wide range of data sets, Nave Bayes [7] and Decision Tree Classifier are used. The ratio of is used to determine the probability of each term (sum of frequency of each word of a class to the total words for that class).

NLP Techniques:

Machine learning algorithms are commonly used in NLP algorithms. Instead of manually coding large sets of rules, NLP can use machine learning to learn these rules automatically by evaluating a set of examples (e.g., a large corpus, such as a book, and breaking it down into a collection of sentences) and making a statistical inference.

6. IMPLEMENTATION:

MODULES:

.Register:

- ☐ User register the web site like name, username, parole & go in parole.
- ☐ Password should be eight character
- ☐ Password should capital & minuscule & numerical

Login:

Once registered completed the user login the valid username & watchword. Once not enter the valid the MSG displayed.” invalid username & password”

Displaying product

Displaying product like recommendation systems. Recommending rating like five,4, upto 1.Display the merchandise like rating, price, product_id, description etc.

Ratings:

Once user enter the login they're going to offer rating to merchandise. Once user offers rating, the merchandise are going to be inflated or bated as per user concern.

Filtering Fake Review:

It's used to distinguish between false and genuine

reviews. This makes it simple for the user to locate a genuine product.

6.1.5. Add to cart:

We booked the product & payments will be done.

Register an account

Email address

Username

Password

Confirm password

Register

Login

Email address

Password

Log in

View More



Gadgets Appliances Men's Slim...
price - 699.0



Nidhi Sequence Men's Rayon Co...
price - 678.0



LEWEL Men's Stylish Colorbloc...
price - 629.0

View More

High Rated Product



Gadgets Appliances Men's Slim...
Price - 699.0 Rating - 4.0



Nidhi Sequence Men's Rayon Co...
Price - 678.0 Rating - 4.0

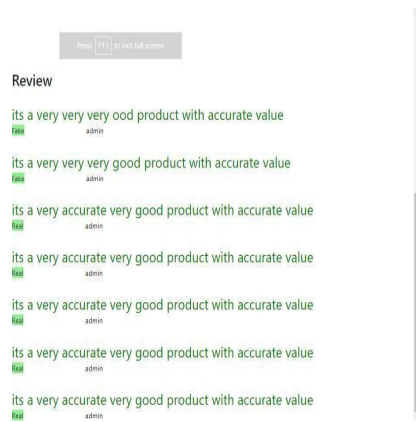


Inchrock Men's & Women's Cybe...
Price - 499.0 Rating - 4.0

Medium Rated Product



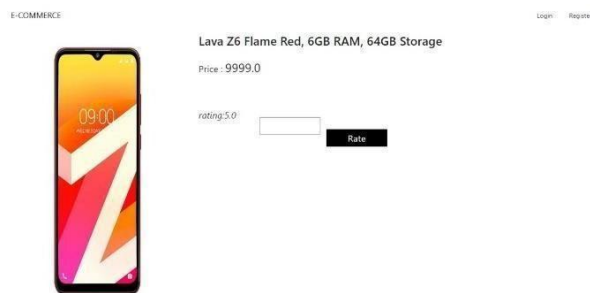
PAUSE Black Solid Cotton Roun...
349.0 3.0



methods for resolving the issue of making a precise and meaningful product recommendation. In e-commerce applications, deep learning techniques with various neural network architectures are used in advice systems to detect different trends and actions of customers. Recommendation for collaborative filtering (CF), which

7. RESULT AND DISCUSSION

- Customer feedback rating (valence)
- Average numeric rating of in-line evaluations
- Number of customer reviews (volume)
- Negative review percentage
- The percentage the proportion of one- and two-star reviews in the total number of reviews
- the percentage of reviews that are neutral
- The percentage of reviews with a rating of three stars out of a total of five stars.
- Positive rating percentage
- The percentage of 4- and 5-star ratings in the total number of reviews



8. CONCLUSION:

Recommender Systems are wide accustomed exhibit the foremost applicable things provided to users based on their previous consumption habits. During a live interaction with a customer, In e-Commerce applications, recommendation systems Modeling and embedding of users and items have had a lot of success. recommendation systems may use a variety of

is based on current user behaviour and data, is widely used in the industry. at the time A deep neural network ensemble is used to create a revised recommendation framework in this paper. To complement collaborative-filtering-based recommendation systems, this paper introduces a new deep learning-based architecture. This express feedback model will be revised in the future. future, with the total number of latent variables for checked output varying over time.

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Shivganga Gavhane Jayesh Patil International Journal of
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<http://www.ijert.org> ISSN: 2278- 0181.

C.SOURCE CODE:

```
from django.shortcuts import render,redirect
from . import models
from .form import Product_Form
from django.views.decorators.csrf import csrf_exempt
from django.http import JsonResponse
from django.contrib.auth.models import User
from django.contrib.auth.forms import UserCreationForm
from django.contrib.auth.models import User
from django.contrib.auth.forms import UserCreationForm
from django.contrib.auth import login,logout
from django.contrib.auth.decorators import login_required
from django.contrib.auth import authenticate
from django.contrib.auth.forms import UserCreationForm, AuthenticationForm
from django.db.models import Max
from detector.forms import ReviewForm
from detector.models import Review from
ml import model as ml
from account import models as account
from cart.models import Cart_Item
@csrf_exempt
def home(request):
    form = AuthenticationForm()
    reg_form = UserCreationForm(request.POST or None)
    mobile = models.Product.objects.filter(category='Mobile').exclude(rat_val lte = 3.9)[:3]
    women =
models.Product.objects.filter(category='Women_wear').exclude(rat_val lte =
3.9)[:3]
```

```
men = models.Product.objects.filter(category='Men_wear').exclude(rat_val__lte = 3.9)[:3]
```

```

    return
render(request,'landing.html',{ 'mobile':mobile,'women':women,'men':men,'reg_form':reg_form,'form':form})

@csrf_exempt
def view_mobile(request):
    obj = models.Product.objects.filter(category='Mobile').values().all()
    return render(request,'view_more.html',{'obj':obj})

@csrf_exempt
def view_men(request):
    obj = models.Product.objects.filter(category='Men_wear').values().all()
    return render(request,'view_more.html',{'obj':obj})

@csrf_exempt
def view_women(request):
    obj = models.Product.objects.filter(category='Women_wear').values().all()
    return render(request,'view_more.html',{'obj':obj})

def detail_blog_view(request,id):
    obj = models.Product.objects.filter(id=id).values().all()
    return render(request,'detail_blog.html',{'pro':pro})

@csrf_exempt
def modile_detail(request):
    mobile = models.Product.objects.filter(category='Mobile').values()
    return render(request,'d')

def detail_blog_view(request,id):
    count = 0
    pro = models.Product.objects.filter(id=id).values()
    review = Review.objects.filter(product_id=id).values()
    review = Review.objects.filter(product_id=id).values()
    print(review)

```

```
        return render(request, 'detail_blog.html', {'review': review, 'pro': pro})

@csrf_exempt
def review_view(request):
```

```

results=""
print('entred form')
# form = ReviewForm(request.POST)
text = request.POST['review']
val = request.POST['id']
print(val)
p_id = request.POST['p_id']
print(p_id)
result = ml.predict(text)
print("result: ", result['result'])
print("prob: ", result['prob'])
user = account.Account.objects.filter(id=val).values('username')
print(user)
user_name= " for
i in user:
    for j in i:
        user_name = i[j]
print(user_name)
print('product')
if text.count('very') > 2 or text.count('awesome') > 2 or text.count('ordinary')>2 or
text.count('worst')>2 or text.count('bad ')>2 or text.count('useless')>2 :
    print('its a fake')
    results = "Given review is Fake"
    add =
Review.objects.create(text=text,review_type='Fake',product_id=p_id,review_name=u
ser_name)
    add.save()
elif text.count('awesome') >=1 and text.count('very') >= 1 : print('its
ake')

```

```
results = "Given review is Fake"
```

```

        add =
Review.objects.create(text=text,review_type='Fake',product_id=p_id,review_name=u
ser_name)

        add.save()

    elif result['result'] == 0:
        results = 'Given review is Not fake'

        add =

Review.objects.create(text=text,review_type='Real',review_name=user_name,produ
ct_id=p_id)

        add.save()

    else:

        results = "Given review is Fake"

        add =
Review.objects.create(text=text,review_type='Fake',product_id=p_id,review_name=u
ser_name)

        add.save()

        prob_statement = "probability score: "+str(result['prob'])

        context = {
            'results': results, 'prob':
            prob_statement
        }

        return JsonResponse({'success':'success'})

        # return render(request,'detail_blog.html',{'pro':pro,'form': form, 'results': results,'prob':
        prob_statement})

@csrf_exempt
def addcart(request):

    pass@csrf_exempt

def usercreate(request):

    pass

@csrf_exempt

```

```
def scales_rate(request):  
    scales = request.POST['buy_id']  
    scale = models.scales_rate.objects.create(pro_id=scales,scales = 1)
```

```

        return JsonResponse({'success':'success'})
@csrf_exempt
def check_view(request):
    pa = request.POST['no_ca'] no
    = request.POST['i_p'] print(pa)
    print(no)
    # product = models.Product.objects.filter(id=cart_no).values() cart
    = Cart_Item.objects.create(product=no, cart=pa)
    return JsonResponse({'success':'success'})
def cart_full_view(request):
    car = Cart_Item.objects.all().values()
    product = ""
    l = []
    print(l) for i
in car :
    print(i) for j
    in i:
        if j == 'product':
            print(i[j])
            l.append(i[j])
    print(l)
    t = tuple(l)
    print(t)
    product = models.Product.objects.filter(id_in=t)
    print(product)
    return render(request, 'cart.html', {'car': car, 'product': product})

```

```
@csrf_exempt
```

```
def check(request) :
```

```

car = Cart_Item.objects.all().delete()

return JsonResponse({'success':'success'})

@csrf_exempt
def rating(request):
    print('entered')
    val = request.POST['rat'] id =
    request.POST['rat_id']
    obj_rat = models.Rating.objects.create(rater_id=id,prod_id=id,rating=val) obj =
    models.Product.objects.get(id=id)
    # obj.rating = val #
    obj.save()
    obj_rat.save()
    obj_rat_2 =list(models.Rating.objects.filter(prod_id=id).values('rating'))
    print(obj_rat_2)
    l=[]
    for i in obj_rat_2: for
        j in i:
            print(i[j])
            l.append(int(i[j]))
    print(l)
    n= sum(l)/len(l)
    print(n) obj_rat_val
    = n obj.save()
    return JsonResponse({'success':'success'})

```