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Image Recognition Using Artificial Intelligence

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Abstract

The leading intention of the project is to provide a new approach for image recognition using Python and its library in which we extensively use python libraries like numpy, Bing image downloader, matplotlib, sklearn and several others as well for the use of machine learning and its properties like support vector machine (SVM). An image recognition technique utilizing aa info of image characteristics is introduced. This {method} is totally different from chemist image method which needs an outsized quantity of knowledge of coaching set pictures in terms of the dimensions of every image and also the what reasonably pictures are they very. Especially, this system is helpful for recognizing pictures that have fastened form and structure like paintings and documents. Then we have a tendency to create use neural network that processes the individual pixels of a picture.

I. INTRODUCTION

Image recognition could also be a portable computer necessity technique that allows computers, laptops and other similar electrical or electronic devices or system to interpret and reason what we all "see" in footage or canned as in [1].usually cited as "picture categorization" or "picture tagging", this crucial task could also be a hermeneutical half find several portable computers, laptops and other similar electrical or electronic devices or system learning anomalies. However, also, can picture recognition really work? What area unit the assorted perspective what area unit its probable pros and cons, and therefore the approach could you see it in your trade? In this confidant, everyone understands rejoinder to any or entire queries and a great deal of. whether or not or not your associate degree knowledgeable expert system planner or handler all in all execution, an initiator desirous to acquire a great deal of, or a by-product supervisor desirous to Traverse what's realizable with laptops, computers and other similar kind of electrical or electronic devices or systems and image recognition, this confidant is for you. [5] Projected that Image recognition could also be a laptop, computers and other similar electrical or electronic devices or systems chore that operates to know and reason numerous parts of pictures and/or canned. Image recognition

Prototype unit of measurements instructed to need a picture as an input and an output tags narrating the picture. The group of achievable output tags unit of measurements cited as target classes as given by [8] and in conjunction escorted

By a prophesy unit, picture recognition prototype also can result a confidence snick related to but certain the prototype is that a picture be in to a unit.

For cite, if we required to form a picture recognition prototype that instinctively finds whether or not or not an image dog was terribly} very given image, the pipeline would, loosely, seem as if this: Image recognition prototype instructed on image that square measure tagged as "cricket bat" or "not a cricket bat"

as additionally exampled by [7] Prototype Input: Image or picture frame Prototype Output: Unit name (i.e. cricket bat) with a confidence snick that results the prospect of that picture having that unit of object. [6] & [10] outlined Picture recognition is also an extensive and far-reaching chore that's gives us an idea about picture recognition. As, such, there are a unit kind of main features that needs to be created once all in all what resolution is foremost for the matter we're engaging.

In general, we tend to square measure able to disjoint picture recognition into two different anomalies: single and multiclass recognition. In one single unit picture recognition, prototypes result just one tag per picture. If we're employment a cricket bat or monitor recognition prototype, picture with a cricket bat and a monitor will still alone be appointed one tag. In cases where alone two units of measurement involved (cricket bat; not a cricket bat), we've got a bent to hunt recommendation from this.

II. INPUT AND OUTPUT DESIGN

INPUT DESIGN

The input design is the link between the information system and the user. It comprises the developing specification and procedures for data preparation and those steps are necessary to put transaction data in to a usable form for processing can be achieved by inspecting the computer to read data from a written or printed document or it can occur by having people keying the data directly into the system. The design of input focuses on controlling the amount of input required, controlling the errors, avoiding delay, avoiding extra steps and keeping the process simple. The input is designed in such a way so that it provides security and ease of use with retaining the privacy. Input Design considered the following things:

- What data should be given as input?
- How the data should be arranged or coded?
- The dialog to guide the operating personnel in providing input.
- Methods for preparing input validations and steps to follow when error occur.

1. Input Design is the process of converting a user-oriented description of the input into a computer-based system. This design is important to avoid errors in the data input process and show the correct direction to the management for getting correct information from the computerized system.

2. It is achieved by creating user-friendly screens for the data entry to handle large volume of data. The goal of designing input is to make data entry easier and to be free from errors. The data entry screen is designed in such a way that all the data manipulates can be performed. It also provides record viewing facilities.

3. When the data is entered it will check for its validity. Data can be entered with the help of screens. Appropriate messages are provided as when needed so that the user will not be in maize of instant. Thus the objective of input design is to create an input layout that is easy to follow

OUTPUT DESIGN

A quality output is one, which meets the requirements of the end user and presents the information clearly. In any system results of processing are communicated to the users and to other system through outputs. In output design it is determined how the information is to be

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displaced for immediate need and also the hard copy output. It is the most important and direct source information to the user. Efficient and intelligent output design improves the system's relationship to help user decision-making.

1. Designing computer output should proceed in an organized, well thought out manner; the right output must be developed while ensuring that each output element is designed so that people will find the system can use easily and effectively. When analysis design computer output, they should Identify the specific output that is needed to meet the requirements.

2. Select methods for presenting information.

3. Create document, report, or other formats that contain information produced by the system.

The output form of an information system should accomplish one or more of the following objectives.

- Convey information about past activities, current status or projections of the
- Future.
- Signal important events, opportunities, problems, or warnings.
- Trigger an action.
- Confirm an action.

III.SYSTEM ANALYSIS

EXISTING SYSTEM:

Image recognition is a portable computer need approach that enables computers, laptops, and other comparable electrical or electronic equipment or systems to interpret and reason what we all "see" in footage or photographs as in. Feature extraction and representation, often known as "image categorization" or "picture tagging," is an important stage in multimedia processing. The topic of extracting ideal features that can accurately capture the fundamental content of images remains a difficult one in computer vision. However, in recent decades, virtually little research has focused on this issue.

DISADVANTAGES OF EXISTING SYSTEM:

- Image recognition as a part of doing something extraordinarily by getting known to a particular kind of image.
- picture recognition prototype also can result a confidence snick related to but certain the prototype is that a picture be in to a unit

Algorithm: KNN.

PROPOSED SYSTEM:

In this phase we will be going under various processes like detecting image, recognizing image. Applying the right algorithm to train the data sets and finally uploading the datasets thereby recognizing images. we have some datasets of images of a particular image or object to which we are going to recognize its name so, first of all we make use of Bing image down loader through this we can download any number of datasets images as we want and then after that by making use of numpy, matplotlib and sklearn we analyse the datasets of images and done numerical computations and after generating error matrix we can simply tell the name of image as predicted output with more accuracy.

ADVANTAGES OF PROPOSED SYSTEM:

- This system extracts the feature from the satellite image using the satellite image as an input value and performs the classification.
- It conjointly to produce extremely fast systems to come up with image processing continuing with picture.

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Algorithm: support vector machine, deep learning algorithm and neural networks, AI algorithms

IV.SYSTEM REQUIREMENTS:

HARDWARE REQUIREMENTS:

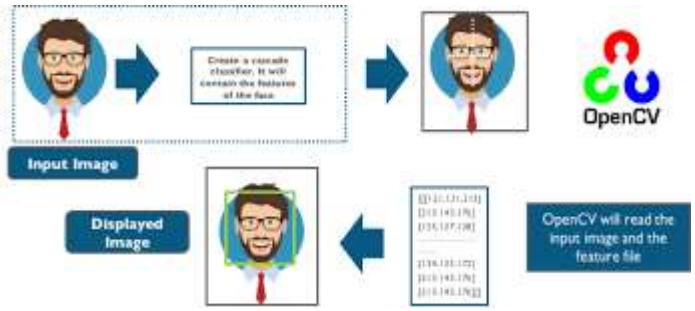
System	:	Intel i5 6 core.
Hard Disk	:	500 GB.
Monitor	:	15'' LED
Input Devices	:	Keyboard, Mouse
Ram	:	16GB.

SOFTWARE REQUIREMENTS:

Operating system	:	Windows 10.
Coding Language	:	Python
Tool	:	PyCharm, Visual Studio Code
Database	:	SQLite

V. SYSTEM DESIGN

SYSTEM ARCHITECTURE:

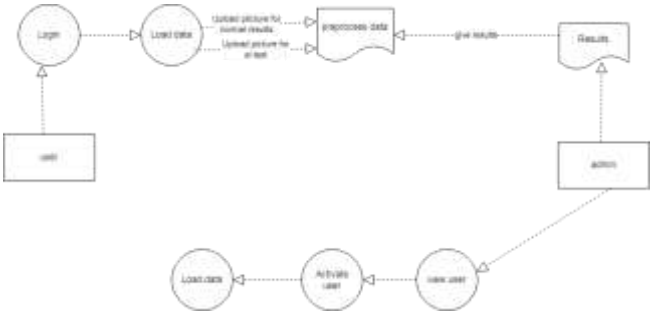


DATA FLOW DIAGRAM:

The DFD is also called as bubble chart. It is a simple graphical formalism that can be used to represent a system in terms of input data to the system, various processing carried out on this data, and the output data is generated by this system.

The data flow diagram (DFD) is one of the most important modelling tools. It is used to model the system components. These components are the system process, the data used by the process, an external entity that interacts with the system and the information flows in the system.

DFD shows how the information moves through the system and how it is modified by a series of transformations. It is a graphical technique that depicts information flow and the transformations that are applied as data moves from input to output.



DFD is also known as bubble chart. A DFD may be used to represent a system at any level of abstraction. DFD may be partitioned into levels that represent increasing information flow and functional detail

UML DIAGRAMS

UML stands for Unified Modelling Language. UML is a standardized general-purpose modelling language in the field of object-oriented software engineering. The standard is managed, and was created by, the Object Management Group.

The goal is for UML to become a common language for creating models of object oriented computer software. In its current form UML is comprised of two major

components: a Meta-model and a notation. In the future, some form of method or process may also be added to; or associated with, UML.

The Unified Modeling Language is a standard language for specifying, Visualization, Constructing and documenting the artifacts of software system, as well as for business modeling and other non-software systems.

The UML represents a collection of best engineering practices that have proven successful in the modeling of large and complex systems.

The UML is a very important part of developing objects oriented software and the software development process. The UML uses mostly graphical notations to express the design of software projects.

GOALS:

The Primary goals in the design of the UML are as follows:

Provide users a ready-to-use, expressive visual modelling Language so that they can develop and exchange meaningful models.

Provide extendibility and specialization mechanisms to extend the core concepts.

Be independent of particular programming languages and development process.

Provide a formal basis for understanding the modelling language.

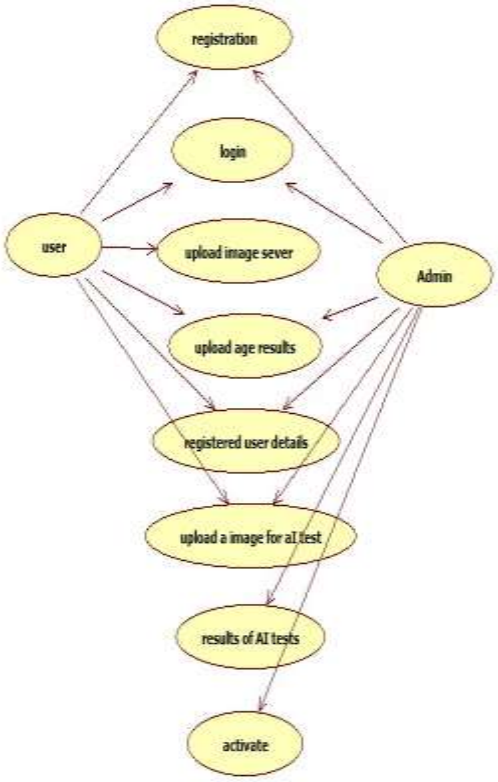
Encourage the growth of OO tools market.

Support higher level development concepts such as collaborations, frameworks, patterns and components.

Integrate best practices.

USE CASE DIAGRAM:

A use case diagram in the Unified Modeling Language (UML) is a type of behavioral diagram defined by and created from a Use-case analysis. Its purpose is to present a graphical overview of the functionality provided by a system in terms of actors, their goals (represented as use cases), and any dependencies between those use cases. The main purpose of a use case diagram is to show what system functions are performed for which actor. Roles of the actors in the system can be depicted.



CLASS DIAGRAM:

In software engineering, a class diagram in the Unified Modelling Language (UML) is a type of static structure diagram that describes the structure of a system by showing the system's classes, their attributes, operations (or methods), and the relationships among the classes. It explains which class contains information.

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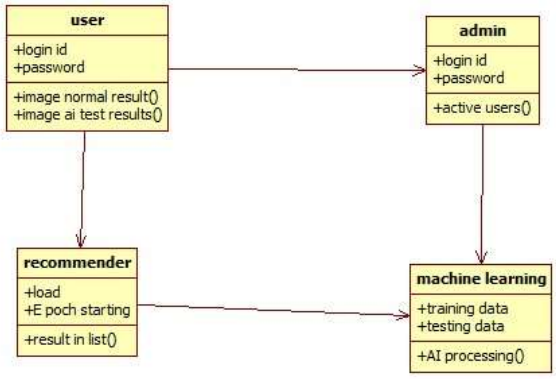
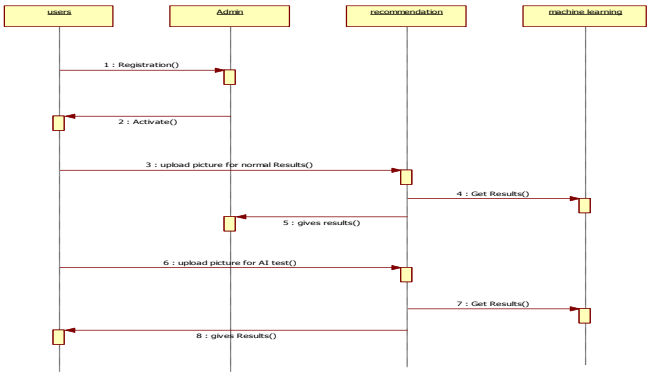


SEQUENCE DIAGRAM:

A sequence diagram in Unified Modeling Language (UML) is a kind of interaction diagram that shows how processes operate with one another and in what order. It is a construct of a Message Sequence Chart. Sequence diagrams are sometimes called event diagrams, event scenarios, and timing diagrams.



ACTIVITY DIAGRAM:

Activity diagrams are graphical representations of workflows of stepwise activities and actions with support for choice, iteration and concurrency. In the Unified Modelling Language, activity diagrams can be used to describe the business and operational step-by-step workflows of components in a system. An activity diagram shows the overall flow of control.

VIII.MODULES DESCRIPTION:

MODULES:

- User
- Admin
- Data Pre-processing
- Machine Learning

DESCRIPTION:

User:

The User can register the first. While registering he required a valid user email and mobile for further communications. Once the user register then admin can activate the user. Once admin activated the user then user can login into our system. User can upload the dataset based on our dataset column matched. For algorithm execution data must be in float format. Here we took numpy, matplotlip and sklearn analyse the dataset of images and done. User can also add the new data for existing dataset based on our Django application.

Prediction in the web page so that user can write the review after predict the review. That will display results depends upon review like positive, negative or neutral

Admin:

Admin can login with his login details. Admin can activate the registered users. Once he activate then only the user can login into our system.

Admin can view the overall data in the browser. All algorithms execution complete then admin can see the overall results in web page.

Data Pre-processing:

A dataset can be viewed as a collection of data objects, which are often also called as a records, points, vectors,

patterns, events, cases, samples, observations, or entities. Data objects are described by a number of features that capture the basic characteristics of an object, such as the mass of a physical object or the time at which an event occurred, etc. Features are often called as variables, characteristics, fields, attributes, or dimensions. The data pre-processing in this forecast uses techniques like removal of noise in the data, the expulsion of missing information, modifying default values if relevant and grouping of attributes for prediction at various levels.

Machine learning:

Based on the split criterion, the cleansed data is split into 60% training and 40% test, then the dataset is subjected to machine learning classifiers such as (Support Vector Machine (SVM) for handling all the proper implementations that are going to do this in our project.al and deep learning solutions supported the most recent analysis in image process and victimization frame work like bring image download numpy and sklearn

IX. CONCLUSION

This study has conducted a theoretical background on opinion mining methods, opinion classification techniques and proposed the application of supervised machine learning method for automatic opinion mining. Experimental results show that LR, SVM and NN are the best among the training methods. This study is valuable as a reference for applications of opinion mining in socioeconomic fields. However, this study still has some limits that can be adjusted in future studies. Firstly, in terms of data collection, this study only collects customer reviews about hotels on Agoda.com. The study may expand to collect reviews about any products or services on e-commerce websites or social networks. Secondly, in terms of the scale, this study only classifies customer reviews on a 2-level scale: positive and negative. More level scales may be applied in the next study (for example, on a 5-level Likert scale). Thirdly, in terms of opinion classification technique, this study only uses supervised machine learning method. It will give better results with a hybrid method of supervised machine learning and lexicon based. However, currently, there are not many tools that support processing Vietnamese as well as English. Finally, this research is just limited to the classification of opinions. The

Extended research's directions will focus on the application of opinion mining in behavior, sentiment, and shopping preference analysis as well as products and services quality assessment, which has more practical implications for entrepreneurs and customers.

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