Team : Thunder Buddies

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1) How image classification is useful in customer perspective?

Image classification can be useful for customers in a variety of ways. For example, it can be used in e-commerce to automatically identify and tag products in images, making it easier for customers to search for and find products. It can also be used in image search engines to help customers quickly find relevant images.

Existing example is **google lens** we can search images using google lens and we will get the required output the mechanism behind it is

* We will load the image in google lens
* Now the mechanism of the google lens is it will first identify the image using image classification
* Then it will search in the web about the type of image it classified

Additionally, image classification can be used in security systems to automatically identify and flag suspicious images, and in healthcare to assist doctors in diagnosing medical conditions.

But due to time constraint we will limit the ML model to limited usage but not to advanced constraints.

Feasibility study report :

The feasibility study is manditory because you have to evaluate the technical ,economical,legal,operational ascepts of the project image classification using CNN which is the study of part of

machine learning which is using deep learning.

Problem statement :

The problem statement in this project is to identify the image which we have given to the software (which is present in the dataset)

Some of the challenges in the image classification are large number of images, no labeled data, data with high dimensionality

Research and analysis :

In medical imaging , traffic control system, identification of the objects in the satellite images, machine vision, brake light detection and more

Technical Feasibility :

It is technically feasible to use Convolutional Neural Networks (CNNs) for image classification. CNNs are a type of neural network that are particularly well-suited for image recognition tasks because they are able to automatically and adaptively learn spatial hierarchies of features from input images. This is achieved through the use of convolutional layers, which apply a learned set of filters to the input image in order to detect specific features or patterns. These features are then passed through a series of pooling layers, which subsample the feature maps to reduce their dimensionality and allow for the detection of larger, more abstract patterns. The final layers of a CNN typically consist of fully connected layers that perform the final classification.

There are many pre-trained models available for image classification using CNNs, such as VGG, ResNet, Inception and DenseNet, which have been trained on large datasets such as ImageNet and can be fine-tuned for specific use case

We will use python, pythong model libraries(like using keras which uploads data set ) and we use some of the techniques such as Pooling layers ,Padding ,Second Convoluntial layer and Pooling Later

Operational Feasibility:

This proposed system works efficiently and effectively.

As this model works on the data we fed to the model this will work for longer amount of time and requires minimal maintenance and will require patch updates and fixing bugs

Economic Feasibility:

Image classification refers to the task of identifying and categorizing objects or features in images or videos. The economic feasibility of image classification depends on a variety of factors, including the cost of the hardware and software required to perform the classification, the cost of obtaining and annotating the training data, and the potential revenue or cost savings that can be generated by the classification. In general, image classification can be economically feasible if the benefits outweigh the costs. However, the specific economic feasibility will depend on the application and the specific implementation.

Legal Feasibility:

The legal feasibility of image classification depends on the laws and regulations of the jurisdiction in which it is used, as well as the specific application and implementation of the classification.

There are several legal considerations that may impact the feasibility of image classification, including:

Data privacy: Image classification systems may collect and use personal data, which is subject to various data protection laws. Organizations must ensure that they comply with these laws by obtaining consent and providing transparency about how data will be used.

Discrimination: Image classification systems may use facial recognition, which can raise concerns about discrimination, particularly in situations where the technology is used for mass surveillance or in a manner that disproportionately impacts certain groups of people.

Intellectual property: Image classification systems may use copyrighted or trademarked images or other protected content, which may require licenses or permission from the rights holders.

Cybersecurity: Image classification systems may be vulnerable to cyber attacks, which can have legal implications if data is stolen or used for illegal activities.

National laws: different countries have different laws and regulations that might affect the legal feasibility of image classification.

Overall, organizations should consult with legal counsel to ensure that their image classification systems comply with all relevant laws and regulations, and to assess the legal risks and liabilities associated with their use.