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## What are the different machine learning algorithms for image classification, and why is CNN used the most?

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**Sabari Nathan**

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Image classification can be accomplished by any machine learning algorithms( logistic regression, random forest and SVM). But all the machine learning algorithms required proper features for doing the classification. If you feed the raw image into the classifier, it will fail to classify the images properly and the accuracy of the classifier would be less.

CNN ( convolution neural network ) extract the features from the images and it handles the entire feature engineering part. In normal CNN architecture, beginning layers are extracting the low-level features and end level layers extract high-level features from the image.

Before CNN, we need to spend time on selecting the proper features for classifying the image. There are so many handcrafted features available( local feature, global feature), but it will take so much time to select the proper features for a solution( image classification) and selecting the proper classification model. CNN handles all these problems and the accuracy of the CNN is higher compared with the normal classifier.

In some scenarios still, handcrafted based classification gives promising results.

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Most commonly used algorithms are:-

1. Support Vector Machines

2. Logistic Regression

3. Decision tree

CNN is widely used because of their generalisation ability on unseen data and ability to handle overfitting unlike others. What algorithm are you going to use re...

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For image classification we can use Machine Learning algorithms like

Logistic or multinomial (softmax)

Decision Trees

Support Vector Machine

For the above image classifications algorithms they we give the more error at the prediction time, while in the CNN it is transfer learning algorithm it will learn the more data in the image

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Image classification algorithms span classical machine learning, shallow neural networks, and deep learning. Below is a compact taxonomy of methods, key characteristics, typical use-cases, and why convolutional neural networks (CNNs) dominate modern practice.

1) Classical (non-deep) methods

- k-Nearest Neighbors (k-NN)

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Generally, questions like this one are hard to answer, but in this case, it so happens that I do have a favorite algorithm. Before spilling the beans, I want to make some parenthetical

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A **convolutional neural network** is the most used algorithm for image processing tasks for example (image classification, image segmentation, object detection, etc.).

But what is a convolutional neural network and how does it help in image classification, let us understand why,

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Yes, your approach is fully logical. However, training several CNN architectures to select the best able to extract the features you need for further classification may be too costly in time

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- There should exist a strong correlation in the data between x and y. If there isn't a high correlation between the observed and predicted variables, then the LR model can add little predictive value.

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Thanks for the A2A 😊

Convolutional Neural Networks (CNNs) is the most popular neural network model being used for **image classification** problem.

It is hard to tell best image classification algorithm in CNN or Deep Learning as it **depends on use-cases**.

Adding more layers will help you to extract more features from images which will help in

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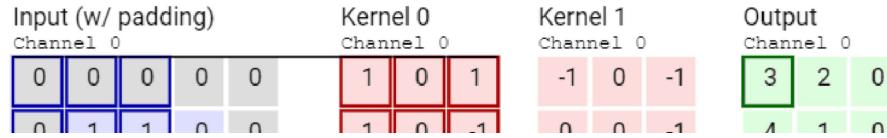
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The main type of neural network used for image classification (image recognition) is the **convolutional neural network (CNN)**. This neural network is based around using *convolutions*, essentially a sliding window dot product that can extract latent information from input units. Below is an example of a convolution (taken from the [Image Recognition](#) course of my startup, AdaptiLab).



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The main reason behind CNN is feature engineering is not required. Before CNN, we need to spend time on feature selection / algorithm for features extraction. When we compare

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local and global components. It also learns different parts from images.

In algorithm-based image classification, we need to select the features(local, global) and classifiers. In some cases, global features work well, and in some cases, local features work well.

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Creator of LogikBot · Upvoted by Parham Hassani, Master Artificial Intelligence, Universi... · Updated 3y

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Ensembles. Nothing else is even close.

If you work in the real-world and work with structured data and you aren't using ensembles you don't know what you are doing.

They are the gold standard for classification and regression models on structured data.

They aren't just my gold standard, they are the gold standard at Google, Microsoft and Amazon also

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