

Imagine that you have one camera and deck of regular gaming cards and you need to create an application that will recognize value and suit of the card.

In preparation for the development of the application, I will need all the necessary equipment: playing cards and a camera for training the algorithm, and a computer to process the information. The primary approach to identifying the card values and their suits, would be to use the CNN algorithm (Convolutional Neural Network), which is known for its success in image and video recognition and can be used for recognizing patterns in images.

A substantial and diverse dataset of images of all cards is crucial. For this reason, I would change different variables throughout the pictures, such as lighting and shadows, different camera and card angles, different backgrounds, varying placement on the table, and different levels of wear and tear on the cards. To artificially increase the dataset, I would also adjust the image settings, including blurring, brightness, contrast, and exposure levels. The dataset representing a wide range of scenarios and conditions will improve the algorithm's ability to generalize information and, therefore, be able to handle real-world situations better.

Once a dataset has been composed, I would start training the algorithm by providing it with the pictures and all the corresponding labels (correct answers). Through this, the algorithm learns to associate certain visual patterns with the labels and make accurate predictions on unseen data. The algorithm iteratively adjusts its internal parameters, such as neural network weights that have been assigned to connections in the network, based on whether the prediction made was correct or not.

After training, the results need to be tested using new card images. Through this, I can evaluate its ability to correctly identify both the value and suit to see the accuracy of the AI model. If the results are not satisfactory, the supervised training process will continue and the dataset should be expanded. Analyzing the errors allows me to focus on the problem areas and make targeted adjustments to the dataset, for example providing more images that involve the scenario in which most mistakes were made.

Integration into the application comes once the model's success is satisfactory. While the algorithm can give close to perfect results, it is important to keep in mind that it can make mistakes as well. To combat this, players should be provided with the option to report mistakes, which will then be reviewed and addressed by the human IT support team, for example, by voiding the bets for the game that contained an error, to grant fairness and integrity of the game.