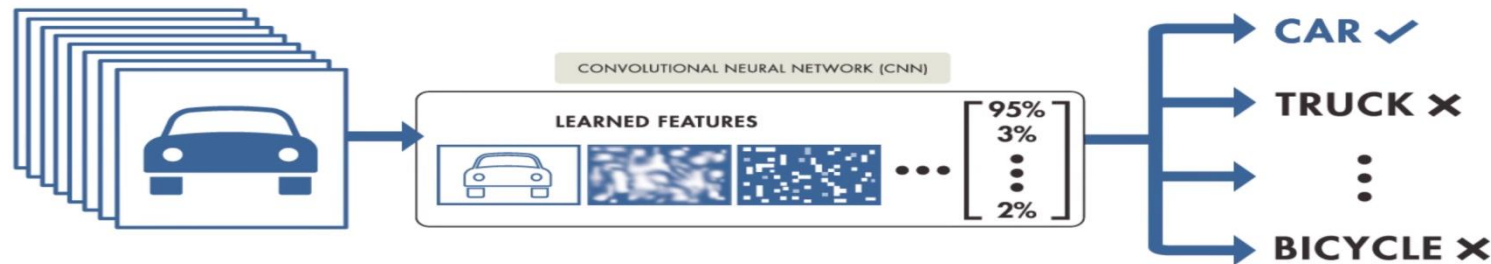


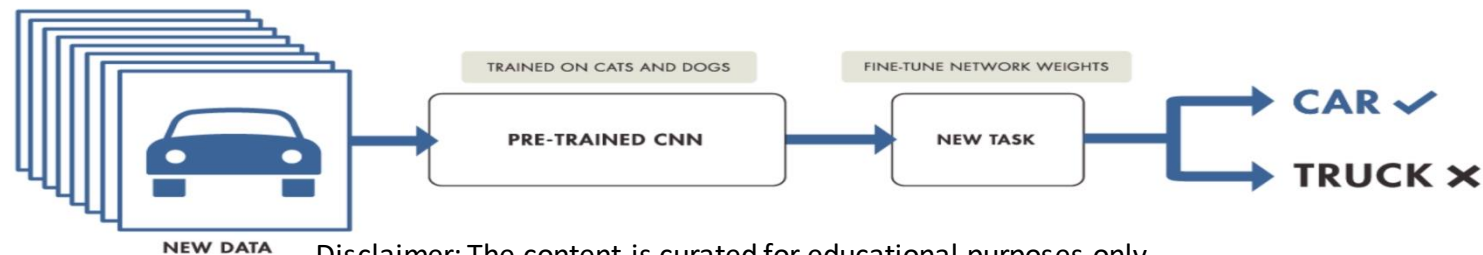
Fine tune your model

- To improve the accuracy of a new neural network model by integrating data from an existing neural network.

TRAINING FROM SCRATCH



TRANSFER LEARNING



Disclaimer: The content is curated for educational purposes only.
© Edunet Foundation. All rights reserved.

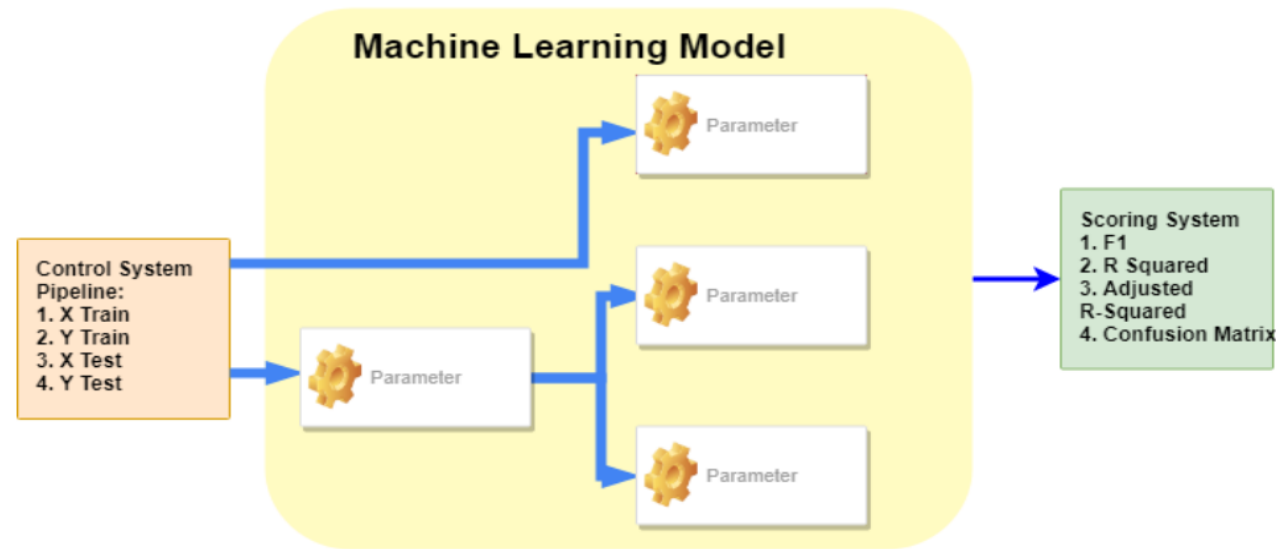
https://miro.medium.com/proxy/1*1CxVzTNILTHgDs5yJO4W9A.png

GridSearch CV

- The process of performing hyperparameter tuning in order to determine the optimal values for a given model.
- GridSearchCV is used to automate the tuning of hyperparameters.
- GridSearchCV is a function that comes in Scikit-learn's `model_selection` package.

Hyperparameter Optimization

- Choosing a set of optimal hyperparameters for a learning algorithm.
- A hyperparameter is a parameter whose value is used to control the learning process.

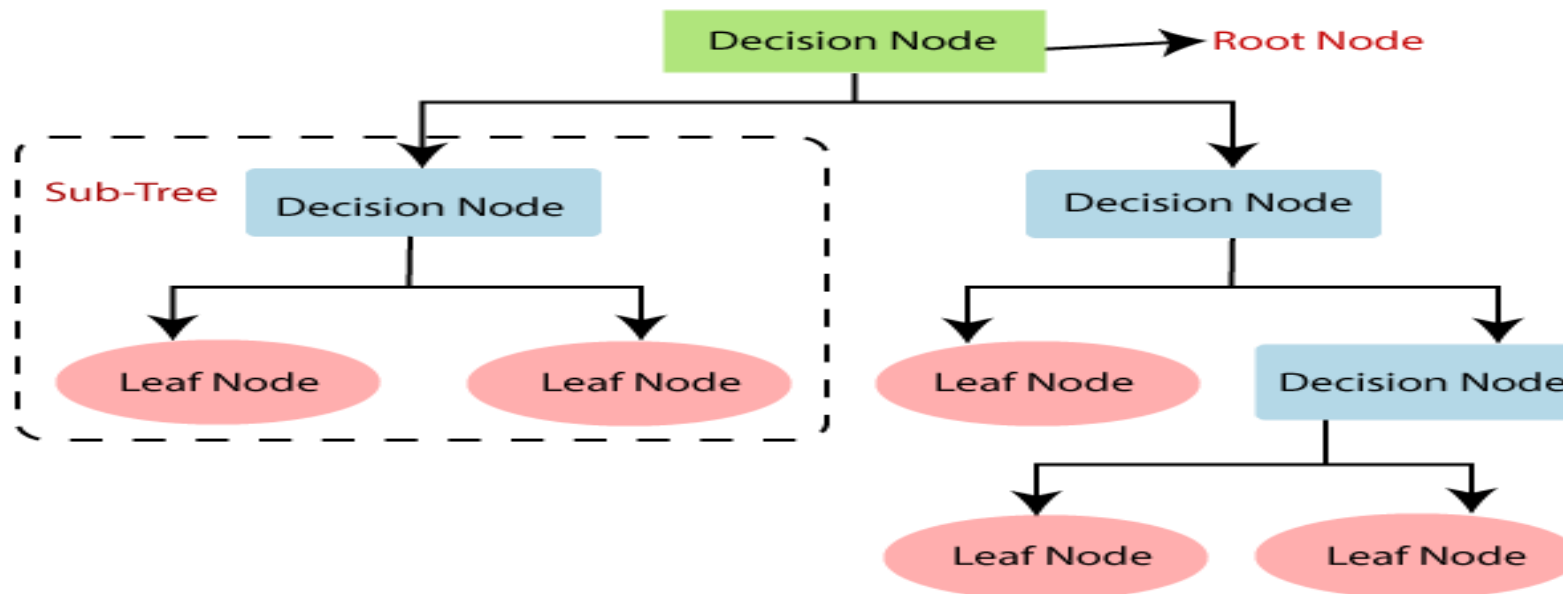


[https://cdn-images-](https://cdn-images-1.medium.com/max/1600/1*Dz55Mr_38UdWbtPcTPCyZg.png)

[1.medium.com/max/1600/1*Dz55Mr_38UdWbtPcTPCyZg.png](https://cdn-images-1.medium.com/max/1600/1*Dz55Mr_38UdWbtPcTPCyZg.png)

Decision Trees

A Supervised learning technique that can be used for both classification and Regression problems.



<https://www.javatpoint.com/machine-learning-decision-tree-classification-algorithm>

Decision Trees Implementation

- Importing the Decision tree classifier from the sklearn library.

```
from sklearn.tree import DecisionTreeClassifier  
clf = DecisionTreeClassifier(criterion = 'entropy')
```

- Fit the classifier

```
clf.fit(X_train, y_train)
```

- Predict the labels of the test attributes

```
y_pred = clf.predict(X_test)
```

Gini Impurity or Entropy

- The criteria for calculating information gain.
- Measures of impurity of a node.

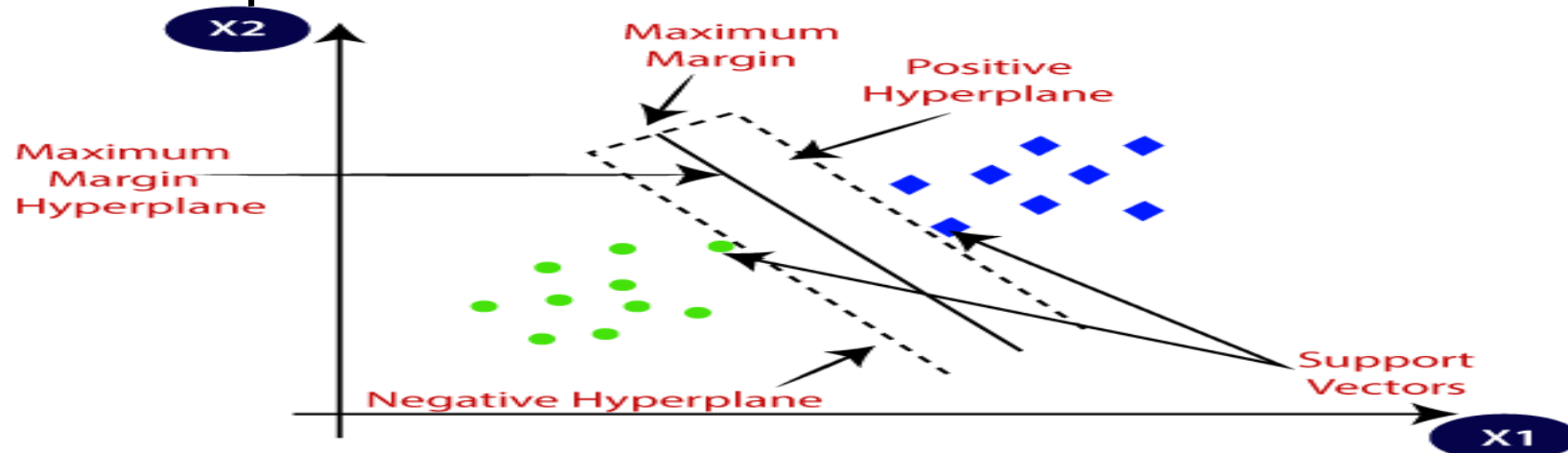
$$Gini = 1 - \sum_{i=1}^n p^2(c_i)$$

$$Entropy = \sum_{i=1}^n -p(c_i) \log_2(p(c_i))$$

where $p(c_i)$ is the probability/percentage of class c_i in a node.

Linear SVM Classification

- Supervised Learning algorithms, which is used for Classification as well as Regression problems.
- To create the best line or decision boundary that can segregate n-dimensional space into classes.



<https://www.javatpoint.com/machine-learning-support-vector-machine-algorithm>

Implementation of SVM using Sklearn

Training the Algorithm:

```
from sklearn.svm import SVC  
svclassifier = SVC(kernel='linear')  
svclassifier.fit(X_train, y_train)
```

Making Predictions:

```
y_pred = svclassifier.predict(X_test)
```


REFERENCES

1. <https://stackabuse.com/implementing-svm-and-kernel-svm-with-pythons-scikit-learn/>
2. <https://www.allerin.com/blog/how-to-fine-tune-your-artificial-intelligence-algorithms>
3. <https://www.mygreatlearning.com/blog/gridsearchcv/>
4. <https://www.kdnuggets.com/2020/05/hyperparameter-optimization-machine-learning-models.html>
5. <https://www.javatpoint.com/machine-learning-decision-tree-classification-algorithm>

THANK YOU