UNIVERSITY ADMIT ELIGIBILITY PREDICTOR

PRIOR KNOWLEDGE

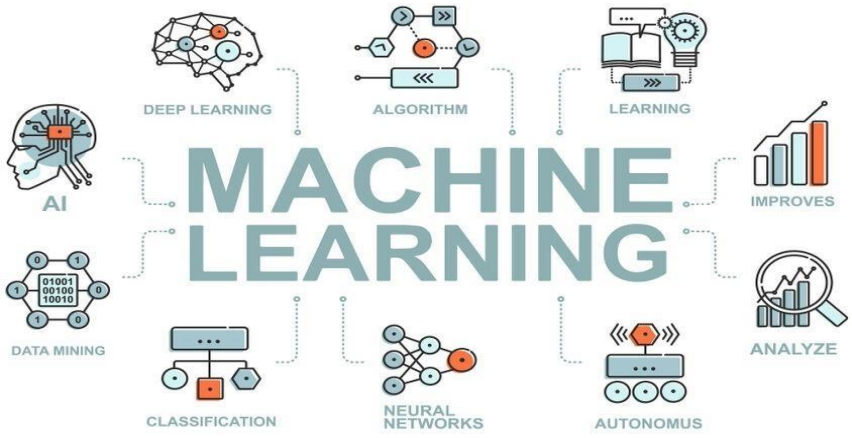
Date	10 November 2022
Team ID	PNT2022TMID53372
Project Name	University Admit Eligibility Prediction System

Prior Knowledge:

Prior knowledge is the knowledge the learner already has before they meet new information. A learner's understanding of a text can be improved by activating their prior knowledge before dealing with the text, and developing this habit is good learner training for them.

Example: A group of young learners are going to read about dolphins. First they talk about what they already know in a brainstorm activity.

In the classroom, Pre-task activities are a good way to explore and share prior knowledge. Making predictions about content, answering true or false questions, agreeing on ‘5 things you know about...' and class or group brainstorming are all effective tools.



Prior knowledge refers to all information about the problem available in addition to the training data. However, in this most general form, determining a model from a finite set of samples without prior knowledge is an ill-posed problem, in the sense that a unique model may not exist.

What is Machine Learning?

A subset of artificial intelligence (AI) and computer science, machine learning (ML) deals with the study and use of data and algorithms that mimic how humans learn. This helps machines gradually improve their accuracy. ML allows software applications to improve their prediction accuracy without being specifically programmed to do so. It estimates new output values by using historical data as input.

Importance of Machine Learning:

In today's technological era, machine learning has become an integral part of diverse industries and sectors. It is extremely important because it provides organizations with insights into trends in customer behavior and business operating patterns, as well as assisting in the creation of new products. Machine learning is fundamental to the operations of many of today's biggest organizations, like Facebook, Google, and Uber. For many businesses across the world, it has become a crucial competitive differentiator.

Types of Machine Learning

Machine learning algorithms are broadly divided into four types – supervised learning, unsupervised learning, semi-supervised learning, and reinforcement learning.

Supervised Learning

In the case of supervised learning, machines are trained by examples. The machine is taught by example in supervised learning. The operator gives the machine learning algorithm a predefined dataset with specified inputs and outputs, and the algorithm needs to figure out how to get those inputs and outputs. While the operator is aware of the proper responses, the algorithm recognises patterns in data, learns from observations, and produces predictions. The algorithm predicts and is corrected by the operator; this process is repeated till the algorithm reaches a high level of precision.

Unsupervised Learning

The machine learning programme examines the data to detect trends. There is no response key or human interference to provide guidance. Instead, the machine analyzes available data to discover correlations and linkages. The machine learning algorithm is left to evaluate massive data sets and address that data in an unsupervised learning process. The programme attempts to organize the data in a way that describes its structure. This could imply organizing the data into clusters or structuring it in a more organized manner. As it evaluates additional data, its capability to make decisions based on that data increases and gets more refined.

Semi-Supervised Learning

It is akin to supervised learning but it employs both labeled and unlabelled data. Labeled data is mainly information that has semantic tags so that the algorithm can interpret it, but unlabelled data does not have that information. Machine learning systems can learn to categorize unlabelled data using this combination.

Reinforcement Learning

Reinforcement learning is concerned with regimented learning procedures in which a machine learning algorithm is given a set of actions, variables, and end values to follow. Following the definition of the rules, the algorithm attempts to explore several options and prospects, monitoring and assessing each output to determine which is ideal. Reinforcement learning instructs the machine through trial and error. It learns from previous experiences and begins to change its approach to the situation to reach the best possible outcome.

Applications of Machine Learning

Some of the applications of machine learning include:

- Recommendation engines
- Business process automation
- Spam filtering
- Malware threat detection
- Predictive maintenance

- Virtual personal assistant
- Medical diagnosis
- Stock market trading
- Speech and image recognition
- Self-driving cars

Clustering:

Clustering is an unsupervised technique. With clustering, the algorithm tries to find a pattern in data sets without labels associated with it. This could be a clustering of buying behavior of customers. Features for this would be the household income, age, … and clusters of different consumers could then be built. Types:

1. Hard clustering – In hard clustering, the data point is assigned to one of the clusters only.
2. Soft clustering – It provides a probability likelihood of a data point to be in each of the clusters.

Classification:

In contrast to clustering, classification is a supervised technique. Classification algorithms look at existing data and predict what a new data belongs to. Classification has been used for spam for years now and these algorithms are more or less mature in classifying something as spam or not. With machine data, it could be used to predict a material quality by several known parameters (e.g. humidity, strength, color, …). The output of the material prediction would then be the quality type (either “good” or “bad” or a number in a defined space like 1-10). Another well known sample is if someone would survive the titanic – classification is done by “true” or “false” and input parameters are “age”, “sex”, “class”. If you would be 55, male and in 3rd class, chances are low, but if you are 12, female and in first class, chances are rather high.

Types of classification –

- K – Nearest Neighbour
- Logistic regression

- Decision tree
- Random forest
- Naive Bayes
- SVM (Support vector machine)

Regression:

Regression is often confused with clustering, but it is still different from it. With a regression, no classified labels (such as good or bad, spam or not spam, …) are predicted. Instead, regression outputs continuous, often unbound, numbers. This makes it useful for financial predictions and alike. A common known sample is the prediction of housing prices, where several values (FEATURES!) are known, such as distance to specific landmarks, plot size,… The algorithms could then predict a price for your house and the amount you can sell it for.

Types of Regression –

- Linear Regression
- Ridge Regression
- Lasso

Python Flask:

Flask is a web application framework written in Python. Armin Ronacher, who leads an international group of Python enthusiasts named Pocco, develops it. Flask is based on the Werkzeug WSGI toolkit and Jinja2 template engine. Both are Pocco projects. Here is the sample python code to build a website using the Flask framework.

```
from flask import Flask

app = Flask(_name_) #creating the Flask class object@app.route('/')

#decorator drfines the

def home():
```

```
    return "hello, this is our first flask website";

if __name__=='_main_':

    app.run(debug = True)
```

Output: