**COMPANY TURNOVER PREDICTION**

**USING**

**ARTIFICIAL INTELLIGENCE**

**INTRODUCTION**

**What is Artificial Intelligence?**

Artificial intelligence (AI) is the simulation of human intelligence processes by machines, especially computer systems. These processes include learning (the acquisition of information and rules for using the information), reasoning (using rules to reach approximate or definite conclusions) and self-correction. Particular applications of AI include expert systems, speech recognition and machine vision.

AI is incorporated into a variety of different types of technology, which are automation, machine learning, machine vision, natural language processing and robotics.

AI can learn through data, teach itself, respond in real time, achieves accuracy, organise data to get most of it.

**How Artificial Intelligence can be achieved?**

Artificial intelligence can be achieved by training the neural networks. It can be done using a programming language called Python. Python is an object-oriented, high-level programming language with integrated dynamic semantics primarily for web and app development. It is extremely attractive in the field of Rapid Application Development because it offers dynamic typing and dynamic binding options.

Python supports the use of modules and packages, which means that programs can be designed in a modular style and code can be reused across a variety of projects. Once you've developed a module or package you need, it can be scaled for use in other projects, and it's easy to import or export these modules.

One of the most promising benefits of Python is that both the standard library and the interpreter are available free of charge, in both binary and source form. There is no exclusivity either, as Python and all the necessary tools are available on all major platforms. Therefore, it is an enticing option for developers who don't want to worry about paying high development costs.

**OBJECTIVES OF THE PROJECT:**

1. To provide prediction of the profits that companies ought to achieve.
2. The predictions are based on the several parameters.
3. Using this model, companies can predict their profits by giving inputs of several parameters.

**PROBLEM STATEMENT:**

To predict the company turnover using Artificial Neural Networks and design the UI.

We predict the company turnover using input parameters such as Revenue invested in R&D, administration, market spending and State.

**REVIEW OF LITERATURE**

**BACKGROUND:**

1. This model was present in the form of employee turnover prediction, where in a prediction was made whether a employee would stay in the company or leave the company.
2. And hence this model is sort of an extension to the employee turn over prediction model.

**DATA COLLECTION**

The data we use is a basic CSV file which is easy to operate.

Source Link : Kraggle

The csv file consists of five columns and forty rows, each column define the parameters as following:

R&D Spend

Administration

Marketing

State

Profit

**METHODOLOGY**

The companies turnover can be predicted using the input parameters.

The methods used in this model are :

1. Data Collection
2. Data Selection
3. Constructing ANN
4. Training the Neural Network
5. Building a UI
6. Algorithm

Data Collection is a method where data is searched and collected from various sites and suitable is selected for the project.

Data Selection is a method where the unwanted parameters in a dataset are not considered and only those parameters which are useful are considered.

Constructing a ANN is a method where a artificial neural network is built which is further used to make predictions based on the dataset.

ANN is a a computing system made up of a number of simple, highly interconnected processing elements, which process information by their dynamic state response to external inputs.

The constructed ANN has to be trained so that it recognises the input values quickly and predicts the companies turn over with more accuracy.

User Interface is built, so that the clients can use the model at ease, without the backend program being exposed, and can predict their companies turnover.

User Interface is designed using node-red and IBM Watson Studio.

The algorithm used is a simple linear regression model, which is a statistical method that enables users to summarise and study relationships between two continuous (quantitative) variables. Linear regression is a linear model wherein a model that assumes a linear relationship between the input variables (x) and the single output variable (y). Here the y can be calculated from a linear combination of the input variables (x). When there is a single input regression. When there are multiple input variables, the procedure is referred as multiple linear regression.variable (x), the method is called a simple linear.

This simple linear regression is useful in financial portfolio predictions and salary forecasting.

**FINDINGS AND SUGGESTIONS**

We use datasets with no null value, so that we can predict the profits with more accuracy.

Companies should be aware that they give inputs corresponding to their companies real values.

This prediction is possible when the companies input all the parameters accurately.

Although deviations are also possible but those are almost negligible.

**CONCLUSION**

This entire project is hence based on the Artificial Intelligence which is implemented in Python language using the neural networks which are first built and then trained.

This model helps various companies to predict their profits or loss. Every company would and should have such a model to predict their turnover so that they can take pre-actions to save their company from incurring losses if predicted by the model.

This model is easy to use and interact, and has minimal number of input parameters which predicts the companies turnover to atmost accuracy.