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**REPORT ON INTRODUCTION TO MACHINE LEARNING**

Machine learning is about making the computer perform intelligent task without explicitly coding. Machine learning came along because many systems used hand coded rules of “if” and “else” decisions to process data or adjust to user input. However, using handcoded rules to make decisions has two major disadvantages: The logic required to make a decision is specific to a single domain and task. Changing the task even slightly might require a rewrite of the whole system. Also Designing rules requires a deep understanding of how a decision should be made by a human expert.

Machine learning algorithms that learn from input/output pairs are called supervised learning algorithms, examples of its problems are: Identifying the zip code from handwritten digits on an envelope, determining whether a tumour is benign based on a medical image and detecting fraudulent activity in credit card transactions. Again we have unsupervised learning algorithms in which only the input data is known, and no known output data is given to the algorithm. Problems which can be solved by this algorithm are like: Identifying topics in a set of blog posts, Detecting abnormal access patterns to a website

We may ask ourselves why studying python anyway? Why not any other language? Python seems to simple and easy to learn language as well as python is a general purpose language. Python contain some libraries are helpful in machine learning such as matplotlib, numpy, pandas, skit-learn, scipy and mglearn. These libraries perform different activities example: Matplotlib helps in data visualization, Pandas used in data analysis as well as modelling, numpy this is the library which can be used for mathematical and logical operation on array as well as operations related to algebra, SciPy is a collection of functions for scientific computing in Python. It provides, among other functionality, advanced linear algebra routines, mathematical function optimization, signal processing, special mathematical functions, and statistical distributions., scikit-learn is a very popular tool, and the most prominent Python library for machine learning. It is widely used in industry and academia, and a wealth of tutorials and code snippets are available online.

There are several difference between python2 and python3 but we should know that python2 is no longer actively developed. these printing are likely to appear during printing example in python2 writing print “hello” is correct but in python3 bracket must be there. Again during division python2 tend to trunket the decimal but python3 gives the actual value, there is also small difference during exception handling

In solving a machine learning problem first, you should well understand your problem then choose the right data, after doing so you should perform data collection then explore your data by deeply understanding your data and see if you need any cleaning in your data you should do so. Choosing your model is the next step and make sure the model selected is corresponds to the type of problem. After that you should train your model using the training data. After training your model perform evaluation of you model and see how accurate it is. Lastly finish with hyperparameter tuning