

MACHINE LEARNING

ML is the field of study that gives the computers the ability to learn without being explicitly programmed (Arthur Samuel, 1959), machine learning is divided into supervised where machine learns from labeled data, unsupervised learning where a machine learns without a teacher and reinforcement learning. Why machine learning?, with machine learning we can do a lot of things such text classification, medical diagnosis, making games like Alpha go, speech recognition etc. With hand coded systems there is a lot of disadvantages because for example with this the logic required to make decision is specific to a single domain and tasks, so changing the task requires a rewrite of the whole system, another example where hand coded systems fails is for detection of faces in images because the way human perceive a face is quite different to the way computers perceive it.

With machine learning we can use any programming language but python is the best for it just because python is a general programming language that can do anything, python is simple to use and is understandable, also python has a lot of libraries such as pandas for data manipulation, numpy for scientific computation, matplotlib for visualization, seaborn for plotting, mglearn etc so with these libraries it is easy to analyze data so as to solve the desired problem in the. There are two versions of python but the difference is that with python version 3 there are some updates and modifications such as the way of outputting codes to screen, for example python version 3 uses parenthesis in print function but python version 2 does not support.

With machine learning we can solve any problem in the society by following phases such as data preparation, data exploration, data cleaning, feature engineering, model selection, advanced feature engineering, model parameter tuning. In data preparation what you can do is just collection of data which can fit the problem you want to solve, in data exploration means you have to analyze data to get understanding and to know if the data cleaning is needed, in data cleaning you can check for missing data points, you can remove outliers etc. In feature engineering means you can transform the gathered data into features that better represent the problem that you are solving so as to improve performance and accuracy. In model selection phase you can select the model which performs best for the dataset at hand. In advanced feature engineering means that you select the feature that better contributes toward predicting the target column. In model parameter tuning means you want to increase the accuracy score using different methods such as grid search.