This report is generated from an attempted assignment requiring to read the introduction on machine learning and raise understanding on the meaning of machine learning and its applications, the importance of its application on organizations (why Machine Learning?) and the problems that machine learning can solve. The assignment also requested to generate ideas on the reasons to why ML is better implemented by python rather than many other programming languages like R or C++ and figure out some important libraries and tools that python provides to simplify ML.

A simple and general concept of machine learning is to generate knowledge from data. So machine learning is the generation of algorithms that can learn from data. Machine learning is already implemented in many ways example automatic recommendation done in many different social medias and websites, learning normal activities in the system and also in many data driven researches example NASA researches.

Machine learning is important since it is easily implemented to data for prediction and decision making compared to early condition coding that required complex codes with few outputs. Also machine learning involves automatic training the computer to recognize computer outputs compared to conditioning that makes the computer to provide outputs that fit the programed conditions.

There are many types of learning algorithms in machine learning, some of the fundamentals are supervised, unsupervised and reinforcement learning where by supervised learning is the one that the algorithm learns from the inputs and output pairs in order to predict the output of the new inputs. Supervised learning has two main types which are regression providing continuous outputs to learnt data and classification which classifies data into discrete outputs. unsupervised learning is the one which learns from only the input data and make predictions. Unsupervised learning can also be divided into distribution modeling and clustering. And reinforcement learning is the learning algorithm that learns from data actions to be taken in a given situation based on rewards and penalties.

Machine learning can be performed by using many languages but python is proved to be best for ML implementation. This is due to many reasons some being many libraries for large quantity data analysis and manipulation example pandas for manipulation and analysis, Scikit-Learn for ML algorithms and NumPy for scientific computation. Also python provides a very interactive development environment for projects.