Assignment 1

1. In my opinion Deep Learning is better than traditional ML. This is because of its importance in solving complex problems like NLP, Image Processing, Speech Recognition etc. Even though the data size required for DL is larger than that of ML and requires more amount of time. I think this problem would be solved in the nearby future with the innovations in high end infrastructure. Thus, I believe that DL is better than ML.
2. a) Supervised Learning

|  |  |
| --- | --- |
| Advantages | Disadvantages |
| 1. Supervised learning can be very helpful in classification problems 2. Another typical task of supervised machine learning is to predict a target numerical value from some given data and labels 3. You can specifically determinehow many classes you want to have | 1. Training needs a lot of computation time, so do the classification 2. Supervised learning cannot give you unknown information from the training data like unsupervised learning do. 3. It cannot cluster or classify data by discovering their features by its own, unlike unsupervised learning |

b) Unsupervised Learning

|  |  |
| --- | --- |
| Advantages | Disadvantages |
| 1. Unlike in supervised algorithms, in unsupervised learning, no one is required to understand and then to label the data inputs. This makes unsupervised learning less complex and explains why many people prefer unsupervised techniques | 1. **You cannot get very specific** about the definition of the data sorting and the output. This is because the data used in unsupervised learning is labeled and not known. It is a job of the machine to label and group the raw data before determining the hidden patterns |

c) Reinforcement Learning

|  |  |
| --- | --- |
| Advantages | Disadvantages |
| 1. Reinforcement learning can be used to solve very complex problems that cannot be solved by conventional techniques. 2. This technique is preferred to achieve long-term results which are very difficult to achieve. 3. This learning model is very similar to the learning of human beings. Hence, it is close to achieving perfection. | 1. Reinforcement learning as a framework is wrong in many different ways, but it is precisely this quality that makes it useful. 2. Too much reinforcement learning can lead to an overload of states which can diminish the results. 3. Reinforcement learning is not preferable to use for solving simple problems. |