**Application of Machine learning**

* Image recognition
* Speech recognition
* Traffic prediction
* Self- driving cars
* Email Spam and Malware Filtering
* Virtual Personal Assistant
* Online Fraud Detection

**Association Rules mining and “Apriori Principle”**

* Association Rule Mining, as the name suggest, association rules are simple if/Then statements that help discover relationship between seemingly independent relational database or other data repositories.
* Most machine learning algorithms works with numeric datasets and hence tend to be mathematical. However, association rule mining is suitable for non-numeric categorical data and requires just a little bit more than simple counting.
* Association Rule Mining in is an Unsupervised Non-linear algorithm to uncover how the items are associated with each other. In it, frequent Mining shows which items appear together in a transaction or relation. It is majorly used by retailers, grocery stores, an online marketplace that has a large transactional database. The same way when any online social media, marketplace, and e-commerce websites know what you buy next using recommendations engines. The recommendations you get on item or variable, while you check out the order is because of Association rule mining boarded on past customer data.
* There are three common ways to measure association:

1. Support
2. Confidence
3. Lift

**Support**

* it says how popular an item is, as measured in the proportion of transactions in which an item set appears **Support (A => B) = P (A U B)**

**Confidence**

* it says how likely item Y is

**Application of Association Rule mining**

* Market basket Analysis
* Medical Diagnosis
* Census Data
* Protein Sequence

**Apriori Principle**

* Read each item in the transaction.
* Calculate the support of every item.
* If support is less then minimum support, discard the item. Else, insert into frequent itemset.
* Calculate confidence for each non-empty subset.
* If confidence is less than minimum confidence, discard the subset. Else, it into strong rules