

because you have good memory, that does not mean you are intellipent. And just because you are intellipent, it does not mean you should have a good memory. However, there are exceptions to these rules. Hu mans begin learning by memorizing. After few years, he realizes that mere capability to memorize is not intellipence. Then he practices on transforming to date stored in memory, to knowledge and applies he data stored in memory to knowledge and applies them to develop skills to solve problems faced in real life. A person with good memory and more knowledge without the required skills cannot be considered intelligent. Search engines replaces human memory and these days the focus is on acquiring intelligence by making use of data available on the web . In humans learning speed depends on individuals an d in machines, learning speed depends on the algorithm selected and the volume of examples exposed to

3. What are the types of machine learning? Explain each with example.

-> . Supervised Machine Learning

Imagine a teacher supervising a class. The teacher already knows the correct answers but the learning process doesn't stop until the students learn the



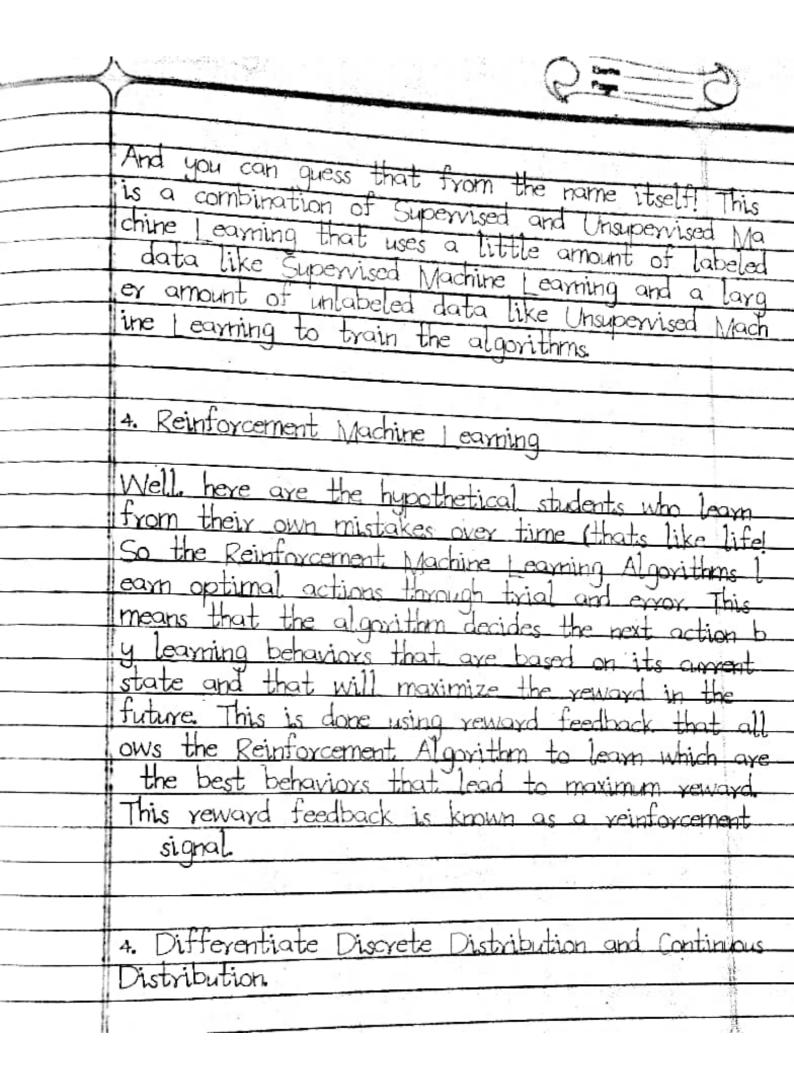
answers as well. This is the essence of Supervised Machine Learning Algorithms. Here, the algorithm lear ns from a training dataset and makes predictions that are compared with the actual output values. If the predictions are not correct, then the algorithm is modified until it is satisfactory. This is learning process continues until the algorithm achieves the required level of performance. Then it can provide the desired output values for any new inputs.

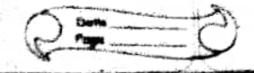
2 Unsupervised Machine Learning

In this case, there is no teacher for the class and the students are left to learn for themselves! So for Unsupervised Machine Learning Algorithms, there is no specific answer to be learned and there is no teacher. In this way, the algorithm doesn't figure out any output for input but it explores the data. The algorithm is left unsupervised to find the underlying structure in the data in order to learn move about the data itself.

3. Semi-Supervised Machine Learning

The students learn both from their teacher and by themselves in Semi-Supervised Machine Learning





4. Differentiate Discrete Distribution and Continuous Distribution.

Discrete Distribution

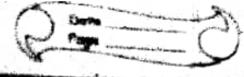
A discrete distribution describes the probability of occurrence of each value of a discrete vandom variable. A discrete random variable is a random variable that has countable values such as a list of non-negative integers.

With a discrete probability distribution each possible value of the discrete random variable can be associated with a non-zero probability. Thus, a discrete probability distribution is often presented in tabular form

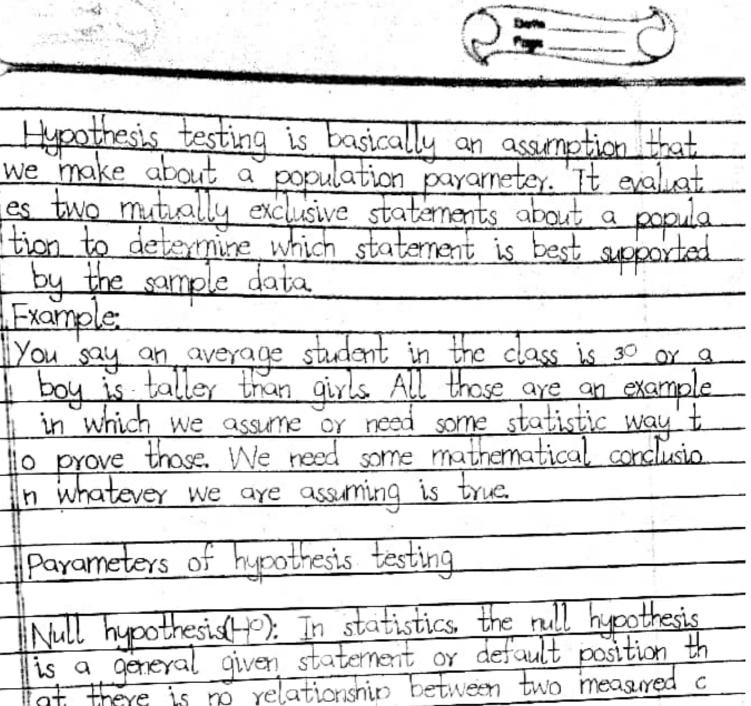
5. What is Central Limit Theorem?

The sample mean will approximately be normally distributed for large sample sizes regardless of the distribution from which we are sampling

Suppose we are sampling from a population with a finite mean and a finite standard-deviation (sigma). Then Mean and standard deviation of the sampling distribution of the sample mean can be given as:



aquad laquad mu_{\bar{X}}=\mu \qquad \stgma barfX}}=\frac{\sigma}{\sqrt{n}} Where barixi represents the sampling distribution of the sample mean of size n each. I'm and is igma are the mean and standard deviation of the population respectively The distribution of the sample tends towards the n formal distribution as the sample size increases All this is saying is that as you take more sample means will look more like a normal distribution. teres what the Central Limit Theorem is saying of raphically. The picture below shows one of the simp lest types of test: rolling a fair die. The more times you roll the die the more likely the shape of the distribution of the means tends to look like a normal distribution graph 6. Explain Hypothesis and Hypothesis Testing -> Hypothesis are statement about the given proble m. Hypothesis testing is a statistical method that is used in making a statistical decision using experimental data. Scanned with CamScanner



Pavameters of hypothesis testing

by the sample data.

Example:

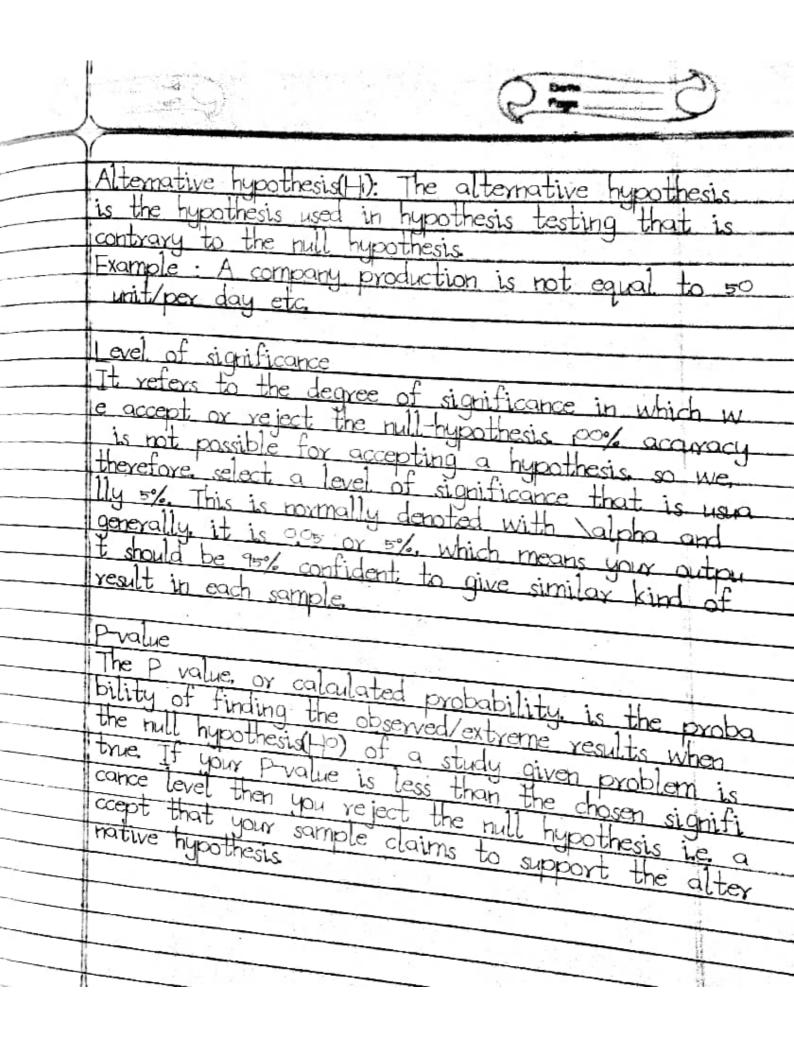
Null hypothesis(HP): In statistics, the null hypothesis is a general given statement or default position the lat there is no relationship between two measured classes or no relationship among groups.

In other words, it is a basic assumption or made based on the problem knowledge.

Example: A company production is = 50 unit/per da y etc.

Alternative hypothesis(+i): The alternative hypothesis
is the hypothesis used in hypothesis testing that is
contrary to the null hypothesis.

Example: A company production is not equal to so
unit/per day etc.





Exp	ain Monte	Carlo	Approxima	tion	in	brief	-
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Monte Caylo Integration is a process of solving integrals having numerous values to integrate upon. The Monte Caylo process uses the theory of large numbers and random sampling to approximate values that are very close to the actual solution of the integral It works on the average of afunction the summation of the values divided by the number of points in the integration and solve the Left value of the integration at the right hand side. The derivation is as follows.

Simulation: Drawing one pseudo-vandom uniform variable from the interval [0,1] can be used to simulate the tossing of a coin: If the value is less than or equal to 050 designate the outcome as heads, but if the value is greater than 0.50 designate the outcome as the outcome as tails. This is a simulation but not a Monte Carlo simulation.

Monte Carlo method: Pouring out a box of coins on a table, and then computing the ratio of coins that land heads versus tails is a Monte Carlo method of determining the behavior of repeated coin tosses but it is not a simulation.