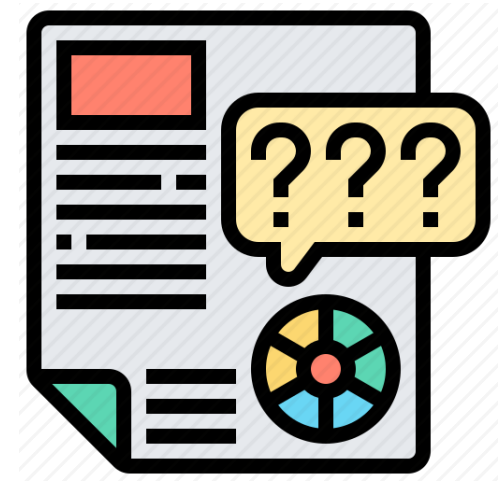


Siddhardhan

Hypothesis Testing:

- Null Hypothesis & Alternative Hypothesis



Math for Machine Learning

Hypothesis

Hypothesis is an assumption that is made based on the observations of an experiment.

Hypothesis

```
graph TD; A[Hypothesis] --> B[Null Hypothesis]; A --> C[Alternative Hypothesis]
```

Null Hypothesis

Null Hypothesis (H_0) is the commonly accepted fact.

Example: [Ptolemy](#) proposed that sun, stars and other planets revolve around the earth.

Alternative Hypothesis

Alternative Hypothesis (H_a) is opposite to null hypothesis and it challenges the null hypothesis.

Example: [Aryabhata](#) proposed that earth and other planets revolve around the sun.

Hypothesis Testing

Hypothesis is an assumption that is made based on the observations of an experiment. Hypothesis Testing is a method carried out to tests the assumptions made in the experiment.



Pharmaceutical
Company



Drug A



Drug B



Headache

Hypothesis Testing

GROUP 1



Drug A



[12, 8, 13, 10, 7]

(Time taken for recovery
in minutes)

Average Time taken = 10 minutes

GROUP 2



Drug B



[15, 12, 18, 16, 14]

(Time taken for recovery
in minutes)

Average Time taken = 15 minutes

NULL HYPOTHESIS: Drug A takes 10 minutes on an average to cure headache; Drug B takes 15 minutes on an average to cure headache. Hence, Drug A is more quicker.

Hypothesis Testing

NULL HYPOTHESIS (H_0): Drug A is more quicker than Drug B.

ALTERNATIVE HYPOTHESIS (H_a): Drug B is more quicker than Drug A.

Possible Outcomes of Hypothesis Testing:

- Reject the Null Hypothesis
- Fail to reject the Null Hypothesis

