2. Objectives

Parametric Hypothesis Testing, Finite Sample Sizes, and Chi-Squared and Student's T Distributions

At the end of this lecture, you will be able to do the following

- Test hypotheses when the i.i.d. data samples have a **Gaussian** distribution.
- Recognize when you cannot assume the **test statistic** to be Gaussian (in the small sample sizes regime).
- Understand, recognize, and use the **Chi-Squared Distribution** .
- Use **Cochran's Theorem** , which relates the sample variance and sample mean when the data samples are i.i.d. Gaussian.
- Understand, recognize, and use the **Student's T Distribution** ; understand that the test statistic follows a Student's t distribution in the small sample sizes regime.

- Test hypotheses in the small sample sizes regime when the i.i.d. data samples have a Gaussian distribution.
- Understand **convergence** of the Student's t distribution to the standard normal with increasing sample sizes.

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