

## UNIT 8: Limit theorems and classical statistics

- $X, X_1, \dots, X_n$  i.i.d.
  - Weak law of large numbers:  $\frac{X_1 + \dots + X_n}{n} \rightarrow \mathbf{E}[X]$
  - Central limit theorem:  $X_1 + \dots + X_n \approx \text{normal}$
- Estimating an unknown mean
  - accuracy of estimates
  - confidence intervals
- Classical statistics more generally
  - the philosophy
  - sample mean-based estimators
  - general methods (maximum likelihood)