

## ESTIMATION OF FUNCTIONALS IN STATISTICS

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In nonparametric statistics, usually nothing is known about density of the population. So it is of interest to estimate the unknown density function and functionals of density which arise in asymptotic results. One method of estimating these functionals is to use kernel-type estimation. We will illustrate the use of these estimators for the functionals of the form

$$(i) T(f) = \int \phi(x) \psi[F(x)] f^2(x) dx$$

where the known functions are such that  $\phi$  is bounded and  $\psi$  has a bounded second derivative and

$$(ii) I(f) = \int f^2(x) dH[F(x)] \text{ where } H \text{ is differentiable but not bounded in the interval } [0,1].$$

$T(f)$  appears in the expression for asymptotic relative efficiency (ARE) of nonparametric tests. (Ahmed & Lin 1983) where as  $I(f)$  comes up in minimum distance estimation (Koul & Dewet 1983)