Statistical depth functions became well known nonparametric tool of multivariate data analyses. The most known depth functions include the halfspace depth. Although the halfspace depth has many desirable properties, some of its properties may lead to biased and misleading results especially when data are not elliptically symmetric. The thesis introduces 2 new classes of the depth functions. Both classes generalize the halfspace depth. They keep some of its properties and since they more respect the geometric structure of data they usually lead to better results when we deal with non-elliptically symmetric, multimodal or mixed distributions. The idea presented in the thesis is based on replacing the indicator of a halfspace by more general weight function. This provides us with a continuum, especially if conic-section weight functions are used, between a local view of data (e.g. kernel density estimate) and a global view of data as is e.g. provided by the halfspace depth. The rate of localization is determined by the choice of the weight functions and theirs parameters. Properties including the uniform strong consistency of the proposed depth functions are proved in the thesis. Limit distribution is also discussed together with some other data depth related topics (regression depth, functional data depth) where the application of the proposed depth functions can bring some improvements.