

Maximum likelihood approach for independent but not identically distributed observations is studied. In the first part of the thesis, conditions for consistency and asymptotic normality of the maximum likelihood estimates for this case are stated. Uniform integrability has a major role in proving the desired properties. K -sample problem serves as an example for using the described method. The second part is focused on estimates obtained by minimizing convex functions. Convexity is a key for showing the consistency and asymptotic normality of the estimates in this case. The results can be used for maximum likelihood when observations with logconcave densities are involved. Finally, normal linear model, logistic regression and Poisson regression examples are provided to present the application of the method.