Diploma thesis abstract

Thesis title: Statistical inference in multivariate distributions based on copula models
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This diploma thesis aims for statistical inference in copula based models. Basics of copula theory are described, followed by methods for statistical inference. These are divided into three main groups. First of them are parametric methods for copula parameter estimation which assume fully parametric structure, thus for both joint and marginal distributions. The second group consists of semiparametric methods for copula parameter estimation which, unlike parametric methods, do not require parametric structure for marginal distributions. The last group describes goodness-of-fit tests used for testing the hypothesis that considered copula belongs to some specific copula family. The thesis is accompanied by a simulation study that investigates the dependence of the observed coverage of the asymptotic confidence intervals for copula parameter on the sample size. Pseudolikelihood method was chosen for the simulation study since it is one of the most popular semiparametric methods. It is shown that sample size of 50 seems to be sufficient for the observed coverage to be close to the theoretical one. For Frank and Gumbel-Hougaard copula families even sample size of 30 gives us satisfying observed coverage.