

**Nonparametric Estimation of Copula Functions For Dependence
Modeling**

by

Song Xi Chen¹ and Tzeeming Huang¹

¹Department of Statistics, Iowa State University

This version: November 2005

ABSTRACT

Copulas are full measures of dependence among components of random vectors. Unlike the marginal and the joint distributions which are directly observable, a copula is a hidden dependence structure that couples the marginals and the joint distribution. This makes the task of proposing a parametric copula model non-trivial and is where a nonparametric estimator can play a significant role. In this paper, we investigate a kernel estimator which is mean square consistent everywhere in the support of the copula function. The kernel estimator is then used to formulate a goodness-of-fit test for parametric copula models.

KEY WORDS: Dependence modeling; Goodness-of-fit tests; Kernel Estimator; Parametric copula models.