Maple in Probability and Statistics

Zaven A. Karian
Department of Mathematics and Computer Science
Denison University
Granville, OH 43023
Karian@Denison.edu

ABSTRACT

Users of statistical packages such as MINITAB and SPSS are confined to numeric and graphic computations. Unfortunately, features of symbolic computation system are not bundled in any of the statistical packages that are in common use. The capabilities of symbolic systems can be of great value in both the practice and teaching of probability and statistics.

This tutorial will show a variety of ways in which the Maple symbolic computing system can be used in teaching mathematical probability and statistics. Maple-based simulations will be used to illustrate such ideas as

- the patterns that can be observed from random samples from prescribed probability distributions;

- the relationships between random variables from different distributions;

- the interpretation of important results such as the Central Limit Theorem;

- nature of type II errors (through considerations of the power functions associated with statistical tests).

This workshop requires no previous knowledge of Maple and it should be of interest to novice as well as experienced users of Maple.