

MULTIMEDIA TOOLS FOR THE TEACHING OF PROBABILITY AND STATISTICS

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As it is well known, understanding some concepts is not a trivial task for a beginner in the field of the Probability and Statistics. With many students, they are initially greeted with mixed feelings of fear and anger. These feelings inhibit the learning of the probability and statistics. Emphasis has been placed in different directions with respect to the teaching of probability and statistics. Firstly, it focused on reducing the effort needed to perform statistical computations, but gave little insight into the meaning of concepts. Secondly, the emphasis was on meaning, but many of the students in the applied sciences were unprepared for such an approach and ended up knowing neither the theory nor the computational procedures. Our aim is to attempt to make probability and statistics as simple as possible for the student. In this work, we present multimedia tools in order to teach many probability concepts and simulating random experiments. The considered concepts are descriptive statistics, random experiments, sets and events, combinatorics, conditional probability, discrete random variables, continuous random variables, and central limit theorem. The computer is the principal instrument in the realization of these simulations. However, in some cases, the student does not know necessary programming concepts to design the experiments. For this reason, it is very important to supply an appropriate environment to the student for the realization of these experiments. These multimedia tools have been carried out in MATLAB using GUIDE (Graphical User Interface Development). The GUI Design Environment tools allow Handle Graphics objects to be manipulated interactively. These GUI's allow creating a teaching interactive environment. The student can select different values of the parameters in an easy way using command buttons, scroll bars and list and edit boxes without programming. The results are displayed using graphics, animations and related numerical values. The GUI's are completed with text. This text is a summary of the underlying mathematical theory related to the GUI'S. Matlab Web Server will provide an access via web to these tools. It implies an easy export of this tool to different operating systems and the virtual teaching. This tool is expected to be applied in the next academic course in the Department of Mathematics of the University of Extremadura (Spain).