Book Reviews

BOOK REVIEWS

Wimmer, G. — Altman, G.:
THESAURUS OF UNIVARIATE DISCRETE PROBABILITY DISTRIBUTIONS.
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The book can be divided into three parts:

i) On 14 pages a short survey of definitions and formulae used in the main part (Stirling numbers, Bell numbers, C-numbers, special functions, standard probability distributions) is presented.

ii) The main part of the book (666 pages) contains in a highly condensed form basic facts about more than 750 discrete probability distributions or families, which are ordered alphabetically according to their names.

iii) A large list of references (172 pages) with more than 4000 references.

Each distribution which appears in the main part is described by a list of values x and corresponding probabilities $P(x)$, and by the probability generating function $G(t) = \sum_x P(x)t^x$; $t \in C$, which is usually expressed analytically with the help of functions from part 1 of the book. Families of distributions are parametrized, and it seems that the authors looked carefully for a "natural" parameter space for each of them. Further, each distribution has its name, and evidently the authors had to give themselves many of these names according to the origin of the distribution. Besides, each distribution is followed by a considerable list of interrelations of the distribution to other distributions or families. For example, the geometric distribution on p. 199 is a particular case of 101 other distributions or families, and it is also a limit in some sense of 57 other distributions. This distribution is also followed by about 300 references dealing with it. This gives an idea of the extend of the work performed by the authors.

The "thesaurus" is neither a textbook, nor a monograph in the usual sense. So it does not contain new theories or methods, but a careful systematization of an enormous amount of facts about discrete distributions, which evidently should be not only sampled, but analyzed and mathematically compared. From a certain point of view, the book can be considered as a complement to the known monograph by N. L. Johnson, S. Kotz and A. W. Kemp (1992), Univariate Discrete Distributions, containing about 300 distributions but also some analytical considerations.

Such books are as good as exactly they are written. Although to check the correctness of the formulae is beyond the possibilities of the reviewer, one has the impression that the text is carefully written and well organized.

The first author is a mathematician, the second a linguist. As is known to the reviewer, an important research in quantitative linguistics is behind the systematization of the distributions in the thesaurus. Although it is difficult to predict now the success of the book, it is clear that this large and important work may stimulate similar methods also in other parts of social or other sciences.

Andrej Pázman, Bratislava