

## BOOK REVIEWS

LEARNING AND GEOMETRY: COMPUTATIONAL APPROACHES. Progress in Computer Science and Applied Logic 14. *D.W. Kueker, C.H. Smith*, Editors. Birkhäuser Verlag, Boston-Basel-Berlin 1996, xiv+210 pages, 53 Fig's. ISBN 3-7643-3825-3, price DM 118.–

The incentive for the edition of the book was a workshop “Learning and geometry” organized at the University of Maryland in January of 1991. Selected papers presented at the workshop reflecting the interchange of ideas proceeding there as well as further development constitute the basis of the book. Moreover, a few other contributions of the workshop participants have been added in order to form a contemporary review of problems and techniques of interpreting data produced by a variety of sensors. The unifying idea is to incorporate learning techniques into the manipulation of data and to make the pattern recognition of images easier in geometrical terms, *e.g.* to perform the partition of features in classes of geometrical shapes. Even when the human vision serves as a model, the successful procedures can be based on somewhat different approaches.

The first part of the book—*Learning*—includes three papers devoted to the concepts of computational learning, *i.e.* learning by examples. The basic Valiant model of learning considered as an estimation of a Boolean function from randomly collected data is extended in several directions, *e.g.* to include noisy data, to instances being points of  $\mathbb{R}^d$  *etc.* The learning algorithms are examined in the framework of current MDL (Mean Description Length) and PAC (Probably Approximate Correct) learning models.

The second part entitled *Geometry* joins two topics—the various representations of geometric configurations (by Cartesian coordinates, distances, angles, matroids, combinatorial and topological patterns, drawings *etc.*) and geometry theorem proving (analytic, synthetic and computerwise fashions).

The book was printed from camera-ready manuscripts supplied by the authors without unifying prescribed format and the differences in composition and graphical setting between individual contributions are perhaps greater than is usual. However, the missing yet frequently referred to figures in the last paper should have been noticed by the editors.

The book will be appreciated not only by research workers and graduate students in computer science but also by specialists in geometry the fundamentals of which are revisited here in a non-conventional mode.

*Ivan Saxe*