# Bayesian Networks, Belief Networks, ... there is only one

# A software package for construction and execution of model based expert systems

| HUGIN EXPLORER™     |  | ECU 700                       |
|---------------------|--|-------------------------------|
| HUGIN PROFESSIONAL™ | 1 user license<br>2 user license<br>Site license | ECU 7.500<br>11.250<br>15.000 |

All prices quoted in ECU (European Currency Unit). Per July 1, 1993: 1 ECU = 1.15 US Dollars

The Hugin System is a software package for construction of model based expert systems in domains characterized by inherent uncertainty. The Hugin System contains an easy to use probability based deduction system, applicable to complex networks with cause—effect causal relations subject to uncertainty. The Hugin System has been applied to tasks such as diagnosis, fault analysis, image understanding, information retrieval, natural language processing, and risk assessment and analysis.

The Hugin System presents a novel development. The implementation is based on an improvement of the award winning work by Lauritzen and Spiegelhalter: *Local Computation with Probabilities on Graphical Structures and their Application to Expert Systems*. Journal of Royal Statistical Society, Vol. 50, No. 2, 1988, pp. 157–224.

HUGIN EXPLORER™ contains three integral parts: a graphical editor for interactive construction, maintenance, and testing of knowledge bases represented by Bayesian networks; a compiler that transforms the network into a computationally efficient structure; and a runtime system that provides facilities for easy entering and propagation of information.

HUGIN PROFESSIONAL<sup>™</sup> also contains HUGIN API<sup>™</sup>, a C library that allows smooth integration of the Hugin inference engine in your own applications.

# "Certainly we handle uncertainty"

Hugin Expert A/S Niels Jernes Vej 10 DK-9220 Aalborg DENMARK

Phone: +45 9815 6644 Fax: +45 9815 8550

Email: info@hugin.dk



 $For \ more \ information \ and \ demonstration \ disk$ 

Agent in North America: Knowledge Industries 350 Cambridge Avenue Palo Alto, CA 94306

Phone: 415 321 9521
Fax: 415 322 3554
Email: ki@netcom.com

# INSTITUTE OF MATHEMATICAL STATISTICS

(Organized September 12, 1935)

The purpose of the Institute is to foster the development and dissemination of the theory and applications of statistics and probability.

### OFFICERS AND EDITORS

### President:

Lawrence D. Brown, Department of Mathematics, White Hall, Cornell University, Ithaca, New York 14853-7901 President-Elect:

Stephen M. Stigler, Department of Statistics, University of Chicago, 5734 University Avenue, Chicago, Illinois 60637 Past President:

Willem R. van Zwet, Department of Mathematics, University of Leiden, P.O. Box 9512, 2300 RA Leiden, The Netherlands Executive Secretary:

Diane M. Lambert, AT&T Bell Laboratories, 600 Mountain Avenue, Room 2C-256, Murray Hill, New Jersey 07974

Jessica Utts, Division of Statistics, University of California, Davis. *Please send correspondence to:* IMS Business Office, 3401 Investment Boulevard #7, Hayward, California 94545

## **Program Secretary:**

Iain M. Johnstone, Division of Biostatistics, HRP Building, Room 10, Stanford University, Stanford, California 94305-5092

Editor: The Annals of Statistics

Michael Woodroofe, Department of Statistics, Mason Hall, University of Michigan, Ann Arbor, Michigan 48109-1027 Editor: The Annals of Probability

Burgess Davis, Departments of Mathematics and Statistics, Purdue University, West Lafayette, Indiana 47907 Editor: The Annals of Applied Probability

J. Michael Steele, Department of Statistics, University of Pennsylvania, Philadelphia, Pennsylvania 19104-6302 Executive Editor: Statistical Science

Robert E. Kass, Department of Statistics, Carnegie Mellon University, Pittsburgh, Pennsylvania 15213 Editor: The IMS Bulletin

Susan R. Wilson, Centre for Mathematics and Its Applications, Australian National University, GPO Box 4, Canberra ACT 2601, Australia

Editor: The IMS Lecture Notes-Monograph Series

Robert J. Serfling, Department of Mathematical Sciences, Johns Hopkins University, Baltimore, Maryland 21218 Managing Editor:

John R. Collins, Department of Mathematics and Statistics, University of Calgary, 2500 University Drive NW, Calgary, Canada T2N 1N4

# Managing Editor:

Robert Smythe, Department of Statistics, George Washington University, 2201 G Street N.W., Washington, D.C. 20052

Journals. The scientific journals of the Institute are The Annals of Applied Probability, The Annals of Probability, The Annals of Statistics and Statistical Science. The news organ of the Institute is The Institute of Mathematical Statistics Bulletin.

Individual and Organizational Memberships. All individual members pay basic membership dues of \$50. Each regular member must elect to receive at least one scientific journal for an additional amount, as follows: The Annals of Applied Probability (\$10), The Annals of Probability (\$20), The Annals of Statistics (\$20) or Statistical Science (\$10). Of the total dues paid, \$24 is allocated to The IMS Bulletin and the remaining amount is allocated equally among the scientific journal(s) received. Reduced membership dues are available to full-time students, permanent residents of countries designated by the IMS Council and retired members. Retired members may elect to receive The IMS Bulletin only for \$20. Organizational memberships are available to nonprofit organizations at \$425 per year and to for-profit organizations at \$700 per year. Organizational memberships include two multiple-readership copies of all IMS journals in addition to other benefits specified for each category (details available from the IMS Business Office).

Individual and General Subscriptions. Subscriptions are available on a calendar-year basis. Individual subscriptions are for the personal use of the subscriber and must be in the name of, paid directly by, and mailed to an individual. Individual subscriptions for 1993 are available to The Annals of Applied Probability (\$70), The Annals of Probability (\$80), The Annals of Statistics (\$80), The IMS Bulletin (\$45) and Statistical Science (\$70). General subscriptions are for libraries, institutions and any multiple-readership use. General subscriptions for 1993 are available for The Annals of Applied Probability (\$70), The Annals of Probability (\$130), The Annals of Statistics (\$130), The IMS Bulletin (\$50) and Statistical Science (\$75). Air mail rates for delivery outside North America are \$80 per title (excluding The IMS Bulletin).

Permissions policy. Authorization to photocopy items for internal or personal use, or the internal or personal use of specific clients, is granted by the Institute of Mathematical Statistics, provided that the base fee of \$7.50 per copy, plus \$.00 per page is paid directly to the Copyright Clearance Center, 27 Congress Street, Salem, Massachusetts 01970. For those organizations that have been granted a photocopy license by CCC, a separate system of payment has been arranged. The fee code for users of the Transactional Reporting Service is 0883-4237/93 \$7.50 + .00.

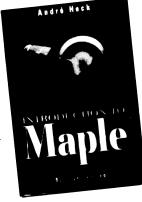
Correspondence. Mail to IMS should be sent to the IMS Business Office (membership, subscriptions, claims, copyright permissions, advertising, back issues), the Editor of the appropriate journal (submissions, editorial content) or the Production Editor, Patrick Kelly, Department of Statistics, University of Pennsylvania, Philadelphia, Pennsylvania 19104-6302.

# SPRINGER FOR STATISTICS

A. HECK, Expertise Centre CAN, Amsterdam

# INTRODUCTION TO MAPLE

Introduction to Maple provides a hands-on, in-depth introduction to the most important aspects of the Maple system. Among the topics covered are integration and summation, ODEs, graphics, and Maple data structures. While it is recommended that the reader have a good background in mathematical theory, no previous exposure to symbolic computation is necessary.



1993/497 pp., 84 illus./Hardcover/\$39.00 ISBN 0-387-97662-0

D. REDFERN, Practical Approach, Ontario, Canada

# THE MAPLE HANDBOOK

The Maple Handbook is an efficient, well-planned, and comprehensive reference and learning tool for the Maple V Release 2 symbolic computation language. All Maple commands are described in a concise, and consistent manner. Topics include calculus, linear algebra, number theory, programming, etc., each explained in context. This book will be an indispensable tool for all Maple users.

It begins with a "Getting Started With Maple" tutorial which lays the groundwork for using Maple efficiently and effectively. The following 12 chapters go into the commands and structures for specific disciplines of computation; and each chapter is prefaced by an introductory quick tutorial providing simple explanations and examples. Entries for individual commands contain information on various aspects, including common parameter sequences, what type of output to expect, additional hints and information, and page references to the standard Maple manual set.

1993/app. 400 pp./Softcover/\$29.00/ISBN 0-387-94054-5

P.G. HALL, Australian National University, Canberra, Australia

# THE BOOTSTRAP AND EDGEWORTH EXPANSION

A readable introduction to the theory of bootstrap methods suitable for graduate students and research workers in statistics. It discusses the applications of bootstrap methods to linear regression, non-parametric regression, and density estimation. The first chapters introduce the basic concepts of bootstrap methods and the edgeworth expansion. Subsequent chapters explore the interaction between the two subjects and their application to statistical techniques. Technical details are deferred to the last chapter enabling a reader with a relatively small exposure to theoretical statistics to enjoy this account of a rapidly growing branch of statistical research.

1992/352 pp., 6 illus./Hardcover/\$49.00/ISBN 0-387-97720-1 Springer Series in Statistics

J. DOOB, University of Illinois, Urbana, IL

# **MEASURE THEORY**

This book is different from other books on measure theory in that it accepts probability theory as an essential part of measure theory. This means that many examples are taken from probability; that probabilistic concepts such as independence, Markov processes, and conditional expectations are integrated into the text rather than being relegated to an appendix; that more attention is paid to the role of algebras than is customary; and that the metric defining the distance between sets as the measure of their symmetric difference is exploited more than is customary.

1993/app. 240 pp./Hardcover/\$49.00/ISBN 0-387-94055-3 Graduate Texts in Mathematics, Volume 143

A. KARR, National Institute of Statistical Sciences, Research Triangle Park, NC

# **PROBABILITY**

This is a textbook which will provide students with a straightforward introduction to the mathematical theory of probability. It is written with the aim of presenting the central results and techniques of the subject in a complete and self-contained account. As a result, the emphasis is on giving results in simple forms with clear proofs and to eschew more powerful forms of theorems which require technically involved proofs. Any graduate student who has a familiarity with real analysis will be able to use this text - measure theory is used only where necessary and undue abstraction is avoided. Throughout, there are a wide variety of exercises to illustrate and to develop the ideas in the text.

1993/app. 300 pp., 15 illus./Hardcover/\$39.00(tent.)/ISBN 0-387-94071-5 Springer Texts in Statistics

# FORTHCOMING SECOND EDITION!

N. FRUDE, University of Whales, Cardiff

# A GUIDE TO SPSS/PC+

1993/app. 250 pp., 25 illus./Softcover/\$39.00(tent.)/ISBN 0-387-91442-0

# Three Easy Ways to Order: CML Tol-Free 1-800-SPRINGER (NJ cell 201-348-4033) (8:30 AM-4:30 PM EST) or FAX 201-348-4505. Please mention sizes when ordering by phone. WIRTE to Springer-Verlag New York Inc., Dept. \$298,PO Bex 2485, Secaucus, NJ 07096-2491. WIRTE your local technical bookstore. Payment can be made by check, purchase order, or credit card, Please enclose: \$2.50 for shipping (\$1.00 additional books) & add appropriate sales tax if you reside in CA, MA, NY, NJ, PA, TX, VA and VT. Canadian residents please add 7% GST. Instructors: Call or Write for information on textbook examination copies. Remember...your 30-day return privilege is always guaranteed!

