

The MIT Press

NEURAL NETWORKS AND FUZZY-LOGIC CONTROL ON PERSONAL COMPUTERS AND WORKSTATIONS

Granino A. Korn

Most neural-network programs for personal computers and engineering workstations simply control a fixed set of canned network-layer algorithms with pulldown menus. This hands-on tutorial demonstrates both neural networks and fuzzy-logic control with a different approach.

A Bradford Book
384 pp. \$55.00

COMPUTATIONAL ASPECTS OF LINEAR LOGIC

Patrick D. Lincoln

This book addresses the computational aspects of linear logic, a branch of classical logic with particularly interesting applications to computer science. It demonstrates how linear logic can be applied to a variety of problems, including the structure of programming languages and issues of computational complexity.

Foundations of Computing series
250 pp. \$35.00 (November)

To order call toll-free 1-800-356-0343 (US & Canada) or (617) 625-8569. MasterCard & VISA accepted. Prices will be higher outside the U.S and are subject to change without notice.

Visit our website! <http://www-mitpress.mit.edu>

Mathematical Structures in Computer Science

Editor-in-Chief

G. Longo, *Laboratoire d'Informatique (CNRS) et DMI, Ecole Normale Supérieure, 45 rue d'Ulm, 75005, Paris (email: longo@dmi.ens.fr)*

Associate Editors

P. L. Curien, *LIENS, 45 rue d'Ulm, 75230 Paris (email: curien@dmi.ens.fr)*

A. M. Pitts, *Computer Laboratory, University of Cambridge, Pembroke St, Cambridge CB2 3QG*

Mathematical Structures in Computer Science (MSCS) is a new journal of excellence in theoretical computer science which focuses on the application of ideas from the structural side of mathematics and mathematical logic to computer science. The journal bridges the gap between theoretical contributions and software design, publishing original papers or broad surveys with original perspectives in all areas of computing, provided that ideas or results from algebra, geometry or category theory form a basis for the work.

MSCS is distinct from existing titles in that it specialises in the art of applying mathematics of genuine interest and general applicability to computer science; its objective is to promote the useful application of high level mathematics to language design and software implementation. The journal increases the circulation of new results in this fast growing area.

Essential reading for:

- Mathematicians with interests in computer science
- Theoretical computer scientists
- Computer scientists working in language development or formal methods

Subscription information

Mathematical Structures in Computer Science, Volume 5, 1995: March, June, September and December 1995: £122. Delivery by airmail £18.00 per year extra. ISSN 0960-1259



Recent articles

The glueing construction and lax limits
HAROLD SIMMONS

Dynamic labeled 2-structures
A. EHRENFUCHT AND G. ROZENBERG

Interaction Systems I: The theory of optimal reductions
ANDREA ASPERTI AND COSIMO LANEVE

Languages under concatenation and shuffling
STEVEN T. TSCHANTZ

Take a closer look – FREE!

Please send me a free sample copy of **Mathematical Structures in Computer Science**

Please send me further information

Name _____

Address _____

Send to:

Journals Marketing Department, Cambridge University Press, FREEPOST*, The Edinburgh Building, Cambridge, CB2 1BR, UK.

Tel: +44 (0)1223 325806 Fax: +44 (0)1223 315052

Email: journals_marketing@cup.cam.ac.uk

(*no postage stamp necessary if posted in UK)

In USA, Canada & Mexico, write to: Cambridge University Press, 40 West 20th Street, New York, NY 10011-4211, USA.



**CAMBRIDGE
UNIVERSITY PRESS**

Introduction to Distributed Algorithms

GERARD TEL

Tel's textbook comes complete with examples and exercises with solutions, but the treatment of algorithms is deep enough to ensure that it will be useful for practising engineers and scientists.

£29.95 net HB 0 521 47069 2 546 pp. 1994

Categories for Types

ROY L. CROLE

This textbook explains the basic principles of categorical type theory and the techniques used to derive categorical semantics for specific type theories. It introduces the reader to ordered set theory, lattices and domains, and this material provides plenty of examples for an introduction to category theory. Aimed at advanced undergraduates and beginning graduates, this book will be of interest to theoretical computer scientists, logicians and mathematicians specialising in category theory

£42.50 HB 0 521 45092 6 353 pp. 1994

£15.95 PB 0 521 45701 7

Qualified Types

Theory and Practice

MARK P. JONES

Describes the use of qualified types to provide a general framework for the combination of polymorphism and overloading, concentrating in particular on the implementation of overloading in Haskell and Gofer.

£27.95 net HB 0 521 47253 9 169 pp. 1994

Distinguished Dissertations in Computer Science 9

Cambridge books are available from good bookshops, alternatively call UK + 44 (0)1223 325970 in the UK to order direct using your credit card, or fax UK + 44 (0)1223 315052.

For further information please email Giulia Williams on science@cup.cam.ac.uk

Foundations of Parallel Computing

D. B. SKILLICORN

The first comprehensive account of this new approach to the fundamentals of parallel programming. It presents a methodology for software construction that produces architecture-independent and intellectually abstract software.

£25.00 net HB 0 521 45511 1 209 pp. 1994

Cambridge International Series in Parallel Computation 7

Mathematical Theory of Domains

V. STOLTENBERG-HANSEN,

I. LINDSTRÖM and E. R. GRIFFOR

The first book devoted to providing an accessible, unified and self-contained introduction to domain theory. It can be used as an introductory textbook or as a general reference for professionals in computer science and logic.

£30.00 net HB 0 521 38344 7 350 pp. 1994

Cambridge Tracts in Theoretical Computer Science 22

C by Example

NOEL KALICHARAN

Covers all aspects of the C language, including a detailed look at file handling and pointers. The text is self-contained and contains a wealth of examples and exercises that test the understanding of the concepts developed in each chapter.

Anybody who wishes to get to grips with the art of programming in C will find this a most valuable book.

£35.00 net HB 0 521 45023 3 378 pp. 1994

£14.95 net PB 0 521 45650 9

Cambridge Computer Science Texts 29



CAMBRIDGE
UNIVERSITY PRESS

The Edinburgh Building, Cambridge CB2 2RU

INSTRUCTIONS TO AUTHORS

Scope

Papers may describe original technical work, survey an area, or present a tutorial; and may be either short or long. Anything related to functional programming is of interest, including: *foundations* (semantics, abstract interpretation, lambda calculi, rewriting, logic, type theory, category theory); *implementation* (compilation, architectures, parallelism, garbage collection, I/O, debugging, profiling); *linguistics* (pure and impure language features, non-determinism, side effects, logical variables, relation to other programming paradigms, proofs about programs, program transformation, program synthesis, partial evaluation); *applications* (applications programs, practical experience, programming techniques, prototyping).

Book Reviews

Books for review, or suggestions for reviews, should be sent to the reviews editor, Philip Wadler (address on inside front cover).

Capsule reviews

Every published paper is accompanied by a capsule review written by one of the referees. A capsule review differs from an abstract in that it is more free to reflect value judgements, helping to set the context or emphasise the importance of a contribution.

Submission of manuscripts

Papers may be submitted to any of the editors. E-mail and postal addresses for the editors appear on the inside front cover. Electronic submission is encouraged: send e-mail containing a copy of the paper in Postscript form. Any method of producing Postscript is fine, but TeX is recommended as it can also be used for typesetting the final paper; see below. Alternatively, post four hard copies of the paper. Submissions should be accompanied by the author's mailing address, telephone number, and, if possible, an electronic mailing address. Papers in the same form should not be submitted or published elsewhere, and authors should inform the editor of any related papers submitted or published elsewhere. Upon acceptance of a paper, the author will be asked to transfer copyright to the publisher.

Electronic manuscripts

The publisher would like to encourage the submission of manuscripts written in LaTeX which can be used for direct typesetting. Authors using LaTeX may wish to use the JFP style file which can be obtained using anonymous FTP from the Internet address `ftp.cup.cam.ac.uk`. Retrieve from directory `/pub/texarchive/journals/latex/jfp` the style file `jfp.sty` and the user guide `jfpguide.tex`. In case of difficulties, there is a help-line available via e-mail, please contact `texline@cup.cam.ac.uk`. Alternatively, authors may use 'article style'. The publisher may be able to use Plain TeX and AMSTeX for typesetting if submitted by authors. *On final acceptance of a paper*, send the TeX source code to the editor by e-mail, or by posting a disc. Discs should be in Apple Mac or PC format and will not be returned. The publisher reserves the right to typeset any article by conventional means if the author's TeX code presents problems in production.

Layout of manuscripts

Manuscripts should begin with an abstract of not more than 300 words. Please avoid footnotes whenever possible. Papers should conform to a good standard of English prose; please consult a style guide such as 'The Elements of Style' by Strunk and White, Macmillan, New York. It is encouraged to present programs in one of two styles: either with identifiers in italic and keywords in bold, or entirely in a fixed-width teletype font. Do not begin a sentence with a symbol or identifier name.

References

The Harvard system of references should be used. Citations are by author's surname and year of publication, and may stand either as a noun phrase (e.g., "Curry (1933)") or as a parenthetical note (e.g., "(Curry 1933)"). List references at the end of the text in alphabetical order. A typical entry is: Curry, H. B. (1933) Apparent variables from the standpoint of mathematical logic, *Ann. of Math.*, 34 (2): 381–404.

Illustrations

Figures should be drawn in indian ink on good quality white paper or produced by computer to comparable quality. Wherever possible they will be reproduced with the author's original lettering. Originals of figures should not be sent until the paper has been accepted. A list of captions for figures should be attached separately.

Proofreading

Please submit papers in their final form. Typographical or factual errors only may be changed at the proof stage. Authors may be charged for correction of non-typographical errors. No page charge is made.

Offprints

25 offprints of each article will be supplied free to each first named author. Extra offprints may be purchased from the publisher.

Please contact the editors for clarification of any of the above points.

COPYING

This journal is registered with the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA. 01923. Organisations in the USA who are also registered with the C.C.C. may therefore copy material (beyond the limits permitted by sections 107 and 108 of US copyright law) subject to payment to C.C.C. of the per-copy fee of \$11.00. This consent does not extend to multiple copying for promotional or commercial purposes. Code 0956-7968/95 \$11.00+.10.

Organisations authorised by the Copyright Licensing Agency may also copy material subject to the usual conditions.

ISI Tear Service, 3501 Market Street, Philadelphia, Pennsylvania 19104, USA, is authorised to supply single copies of separate articles for private use only.

For all other use, permission should be sought from Cambridge or the American branch of Cambridge University Press.

JOURNAL OF
Functional Programming

VOLUME 5 PART 4 OCTOBER 1995

CONTENTS

On-line & off-line partial evaluation: semantic specifications and correctness proofs CHARLES CONSEL AND SIAU CHENG KHOO	461
Semantics directed program execution monitoring AMIR KISHON AND PAUL HUDAK	501
Communication lifting: fixed point computation for parallelism WILLEM G. VREE AND PIETER H. HARTEL	549
Simple and efficient purely functional queues and dequeues CHRIS OKASAKI	583
A unifying type-theoretic framework for objects MARTIN HOFMANN AND BENJAMIN PIERCE	593
Refining reduction in the lambda calculus FAIROUZ KAMAREDDINE AND ROB NEDERPELT	637
Book review	653
Author Index to Volume 5	661

Printed in Great Britain by the University Press, Cambridge

CAMBRIDGE
UNIVERSITY PRESS



0956-7968(199510)5:4;1-D