

KYBERNETES

International Journal of Cybernetics and Systems
(a quarterly)

EDITOR: B. H. Rudall

ASSISTANT EDITORS:

Professors

W. H. von Alven (USA), F. H. George (UK), T. C. Helvey (USA),
E. Nicolau (Romania) and Wu Xuemou (China)

ADVISORY BOARD:

Professors

A. Bensoussan (France), Chen Hanfu (China), S. Dillon Ripley (USA)
and M. Manescu (Romania)

Founder Editor: Professor J. Rose (UK)

There are also 15 section editors from 8 countries and 21 members of the
Editorial Board from 11 countries

This journal is concerned with the interdisciplinary study of cybernetics and systems in the widest sense. Among the extensive range of topics covered are the following: *Artificial Intelligence, Automation, Cybernetic Modelling, Computer Simulation, Biocybernetics, Economic and Social Systems, Nature and Validation of General Systems, Ecosystems, Adaptive Systems, Philosophy of Cybernetics, the Interrelation between Cybernetics and other Sciences.*

Kybernetes, now in its eighteenth year of publication, aims to endow cybernetics and general systems with an authoritative voice of its own and to establish a competent forum for the exchange of knowledge and information in relevant fields. One of the primary objectives of this publication is to weed out pseudo-cybernetics claims and to base cybernetics on a sound foundation; hence, highly speculative papers that lie on the fringe of cybernetics and systems sciences will not be published. The journal contains only *original papers*; it is the official publication of the World Organisation of General Systems and Cybernetics.

Enquiries and orders to:

MCB UNIVERSITY PRESS

62 Toller Lane

Bradford

BD8 9BY

England

Tel. 0274 499821

Telex. 51317 MCBUNI G

Fax. 547143

For Subscription Rates, Advertising Rates and Back Issues enquire at MCB University
Press, as above.

A PRESTIGE PUBLICATION, INDISPENSABLE TO
YOUR ORGANISATION AND TO YOU
NOW IN ITS EIGHTEENTH YEAR

Notes for Contributors

1. Manuscripts should preferably be written in English, but papers in French and German will also be accepted. All manuscripts will be referred to acknowledged experts in the subject. Only those receiving favourable recommendations from the referees will be accepted for publication. Manuscripts may be sent to any Board member, any Deputy Editor or the Editor.

2. Typescripts should be double spaced, on one side of good grade paper, allowing a reasonable left-hand margin. An original and two copies should be submitted with the author's full postal address, position and affiliations.

3. A short abstract of about 80 words should precede the main text. *List of symbols:* A typewritten list of any special symbols should be submitted with the manuscript. The list should not define the symbols mathematically, but should serve to identify them typographically. The list will not appear in print, but is essential to help the typesetter and to avoid costly correction in proof.

4. One copy of photographs, prints or transparencies of good quality and unmarked should be submitted. Where lines or lettering are to appear on the photograph, an additional print should be supplied appropriately marked. Each should have, lightly written on the back, the author's name, the figure number and an indication of which is the top of the picture.

5. One copy of each line diagram should be submitted at approximately twice final size and unlettered. Diagrams must be drawn in indian ink on plain white or transparent paper. A second copy should be supplied with lettering included. The author's name and the figure number should be written on this copy. Figures should be numbered consecutively, with arabic numerals, have descriptive captions, and be mentioned in the text. The correct position for each figure should be indicated in the margin of the manuscript.

6. Tables should be typewritten on separate sheets. Avoid, where possible, very wide tables. Number tables

consecutively with roman numerals. Each should have a brief heading. Exceptionally lengthy tables may be summarized for publication with a note that copies of details can be obtained from the authors.

7. Equations: Wherever possible, mathematical equations should be typewritten, with subscripts and superscripts clearly indicated. The printer will set all mathematical symbols in italics unless otherwise indicated; symbols or letters to be set in roman (upright) type should be encircled in pencil, while bold letters should be shown by a wavy underline.

8. References: In the text, references are indicated by superior arabic numbers (without brackets), and should be confined to publish work that is directly pertinent. References should be listed at the end of the paper in numerical order. Authors' initials should precede their names; cited article titles should be quoted in full, enclosed in quotation marks; and abbreviations of journal names should follow the style of *Chemical Abstracts* or *Physical Abstracts*, and be underlined for italics: P.W. Anderson, "More is different" *Science* **177**, 393 (1972) C.V. Negoita, *Fuzzy Systems* (Abacus Press, Tunbridge Wells, UK, 1980)

Citations such as 'personal communication', 'unpublished work', etc., are not acceptable as numbered references but can be included in parenthesis in the text. Do not use summaries as references.

9. Proofs: Page proofs will be sent to authors for correction, for return within 48 hours by airmail. Correction to proofs should be restricted to printers' errors only. Authors are entitled to 25 offprints of their article free of charge. Additional offprints may be purchased if they are ordered on the form sent with the proofs.

10. Manuscripts, whether accepted or rejected, will not be returned to the authors.

11. Submission of an article will be taken to imply that it has not been previously published and that it is not on offer to any other publisher.

ROBOTICA

Volume 8 Part 4

October–December 1990

CONTENTS

Introduction to the special issue on robots and food-handling, Michael Kassler (Australia)	267
Robotic picking of citrus, R. C. Harrell, P. D. Adsit, R. D. Munilla and D. C Slaughter (USA)	269
Developments in robot grippers for soft fruit packing in New Zealand, J. D. Tedford (New Zealand)	279
Robotic handling and packaging of poultry products, K. Khodabandehloo (UK)	285
Robotics and prawn-handling, Michael Kassler (Australia)	299
Robot deboning for beef forequarters, G. Purnell, N. A. Maddock and K. Khodabandehloo (UK)	303
Robot milking: a review, A. R. Frost (UK)	311
END OF SPECIAL ISSUE	
Reports and Surveys (Automation in Food Conveyance Systems, Automation in Food Handling, Automation in Food Research, Innovative Robots, Robots Worldwide, Software Developments) B. H. Rudall (UK)	319
Book Reviews	325
Conference News	329
R & D at the Laboratory for the Control Systems and Automation of the Korea Advanced Institute of Science and Technology, Hyung S. Cho (Republic of Korea)	333
Modeling and adaptive control of a flexible one-link manipulator, Jian-Shiang Chen and Chia-Hsiang Menq (USA)	339
Design of a compact statically balanced direct-drive manipulator, Tarek M. Abdel-Rahman and M. A. Elbestawi (Canada & Qatar)	347
Some comparisons of serial-driven and parallel-driven manipulators, D. McCloy (UK)	355
Announcements	363

© CAMBRIDGE UNIVERSITY PRESS 1990

Cambridge University Press
The Pitt Building, Trumpington Street, Cambridge CB2 1RP, UK
40 West 20th Street, New York, NY 10011-4211, USA
10 Stamford Road, Oakleigh, Melbourne 3166, Australia

Printed in Northern Ireland by The Universities Press (Belfast) Ltd.