Fantastic Titles from Cambridge!

Computational Logic and Human Thinking

How to be Artificially Intelligent

Robert Kowalski

Contents: Preface; Summary; Introduction; 1. Logic on the underground; 1a. The syntax of logical form; 2. The psychology of logic; 3. The fox and the crow; 3a. Truth and proof; 4. Negation as failure; 4a. The semantics of intended interpretations; 5. How to become a British citizen; 6. The louse and the Mars explorer; 7. Maintenance goals as the driving force of life; 8. The meaning of life; 9. Levels of consciousness; 10. Abduction; 11. The prisoner's dilemma; 12. Motivations matter; 12a. The logic of abductive logic programming; 13. Biconditionals; 14. Computational logic and the selection task; 15. The changing world; 16. Logic and objects; 17. Meta-logic for self-improvement; Conclusions; References; Index.

\$110.00: Hb: 978-0-521-19482-2: 344 pp \$46.00: Pb: 978-0-521-12336-5

Fundamentals of Object Tracking

Subhash Challa, Mark R. Morelande, Darko Mušicki, Robin J. Evans \$90.00: hd: 978-0-521-87628-5: 364 pp.

Multibiometrics for Human Identification

Edited by Bir Bhanu, Venu Govindaraju \$90.00: Hb: 978-0-521-11596-4: 408 pp.

Face Geometry and Appearance Modeling Concepts and Applications

ZICHENG LIU, ZHENGYOU ZHANG \$80.00: Hb: 978-0-521-89841-6: 320 pp.

How to Fold It The Mathematics of Linkages, Origami and Polyhedra

JOSEPH O'ROURKE

\$80.00: Hb: 978-0-521-76735-4: 192 pp. \$27.99: Pb: 978-0-521-14547-3

The Elements of MATLAB Style

RICHARD K. JOHNSON \$19.99: Pb: 978-0-521-73258-1: 180 pp.



SECOND EDITION

Computational Principles of Mobile Robotics

Gregory Dudek, Michael Jenkin

\$99.00: Hb: 978-0-521-87157-0: 406 pp. \$49.99: Pb: 978-0-521-69212-0

Scientific Software Design The Object-Oriented Way

The object-offented way

Damian Rouson, Jim Xia, Xiaofeng Xu

\$99.00: Hb: 978-0-521-88813-4: 408 pp. \$60.00: Pb: 978-0-521-71617-8

Prices subject to change.



www.cambridge.org/us/computerscience 800.872.7423

UNIVERSITY PRESS

JOURNALS

The Knowledge Engineering Review

Editors-in-Chief

Peter McBurney, University of Liverpool, UK Simon Parsons, Brooklyn College, City University of New York, USA

The Knowledge Engineering Review is committed to the development of the field of artificial intelligence and the clarification and dissemination of its methods and concepts. *KER* publishes analyses – high quality surveys providing balanced but critical presentations of the primary concepts in an area; technical tutorials – detailed introductions to an area; application and country surveys commentaries and debates; book reviews; and a popular 'from the journals' section, providing the contents of current journals in theoretical and applied artificial intelligence.

Price information is available at: http://journals.cambridge.org/ker

Free email alerts

Keep up-to-date with new material – sign up at http://journals.cambridge.org/ker-alerts

For free online content visit: http://journals.cambridge.org/ker





The Knowledge Engineering Review is available online at: http://journals.cambridge.org/ker

To subscribe contact Customer Services

in Cambridge: Phone +44 (0)1223 326070 Fax +44 (0)1223 325150 Email journals@cambridge.org

JOURNALS

Combinatorics, Probability and Computing

Editor-in-Chief

Béla Bollobás, DPMMS, Cambridge, UK; University of Memphis, USA

Published bimonthly, *Combinatorics, Probability* & *Computing* is devoted to the three areas of combinatorics, probability theory and theoretical computer science. Topics covered include classical and algebraic graph theory, extremal set theory, matroid theory, probabilistic methods and random combinatorial structures; combinatorial probability and limit theorems for random combinatorial structures; the theory of algorithms (including complexity theory), randomised algorithms, probabilistic analysis of algorithms, computational learning theory and optimisation.

Price information is available at: http://journals.cambridge.org/cpc

Free email alerts

Keep up-to-date with new material – sign up at http://journals.cambridge.org/cpc-alerts

For free online content visit: http://journals.cambridge.org/cpc





Combinatorics, Probability and Computing is available online at: http://journals.cambridge.org/cpc

To subscribe contact Customer Services

in Cambridge: Phone +44 (0)1223 326070 Fax +44 (0)1223 325150 Email journals@cambridge.org

JOURNALS

Journal of Functional Programming

Editors-in-Chief

Matthias Felleisen, Northeastern University, USA Xavier Leroy, INRIA Rocquencourt, France

The Journal of Functional Programming is the only journal devoted solely to the design, implementation, and application of functional programming languages, spanning the range from mathematical theory to industrial practice. Topics covered include functional languages and extensions, implementation techniques, reasoning and proof, program transformation and synthesis, type systems, type theory, language-based security, memory management, parallelism and applications. The journal is of interest to computer scientists, software engineers, programming language researchers and mathematicians interested in the logical foundations of programming.

Price information is available at: http://journals.cambridge.org/jfp

Free email alerts

Keep up-to-date with new material – sign up at http://journals.cambridge.org/jfp-alerts

For free online content visit: http://journals.cambridge.org/jfp



Journal of Functional Programming is available online at: http://journals.cambridge.org/jfp

To subscribe contact Customer Services

in Cambridge: Phone +44 (0)1223 326070 Fax +44 (0)1223 325150 Email journals@cambridge.org



JOURNALS

Mathematical Structures in Computer Science

Editor-in-Chief

G. Longo, CNRS and Ecole Normale Supérieure, Paris, France

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

Price information is available at: http://journals.cambridge.org/msc

Free email alerts

Keep up-to-date with new material – sign up at http://journals.cambridge.org/msc-alerts

For free online content visit: http://journals.cambridge.org/msc



Mathematical Structures in Computer Science is available online at: http://journals.cambridge.org/msc

To subscribe contact Customer Services

in Cambridge: Phone +44 (0)1223 326070 Fax +44 (0)1223 325150 Email journals@cambridge.org



JOURNALS

Go Mobile

CJO Mobile (CJOm) is a streamlined Cambridge Journals Online (CJO) for smartphones and other small mobile devices



- Use CJOm to access all journal content including *FirstView* articles which are published online ahead of print
- Access quickly and easily thanks to simplified design and low resolution images
- Register for content alerts or save searches and articles – they will be available on both CJO and CJOm
- Your device will be detected and automatically directed to CJOm via: journals.cambridge.org



Instructions for contributors

Robotica aims to be an outlet for publication of original papers of the highest quality in the field of Robotics and closely related areas. This includes: novel robotic mechanism and actuator design; robot kinematics, dynamics and control; computer vision; sensor fusion; teleoperation and haptic interfaces; robot motion planning; and artificial intelligence. In addition, papers that apply techniques from Robotics to other fields are also welcome. Examples include dynamics and control models applied to biological systems, the description of implementations of robots in factories, service and agricultural settings, and general mechatronic design. Works may be theoretical, computational or experimental, or some combination. Both short papers (rapid communications), and longer archival papers are welcome. Proposals for special issues on topics of current interest are welcome, and can be submitted via email to the editor.

Authors are urged to ensure that their papers are written clearly and attractively, in order that their work will be readily accessible to readers. Manuscripts must be written in English. *Robotica* employs a rigourous peer-review process whereby all submitted manuscripts are sent to recognized experts in their subjects for evaluation. The Editor's decision on the suitability of a manuscript for publication is final. Manuscripts, whether accepted or rejected, will not be returned to authors.

Submission of manuscripts

Manuscripts for consideration by Robotica should be submitted electronically, using the Manuscript Central System, via http://mc.manuscriptcentral.com/cup/robotica. This system will allow authors to benefit from faster review and earlier, online publication. The system will accept PDF files; most other files types will be automatically converted directly into PDF. Source files are required for any paper accepted for publication. Authors who are unable to submit online should contact the Editorial Office (gregc@jhu.edu) for assistance.

Submission of a paper is taken to imply that it has not been previously published and that it is not being considered for publication elsewhere. Upon acceptance of a paper, the author will be asked to transfer copyright to the publisher. Authors are responsible for obtaining written permission from the copyright owners to reprint any previously published material included in their article.

Layout of manuscripts

Text should be double spaced throughout, on one side of the paper, allowing generous margins on all sides of the paper. Please avoid footnotes if possible. Papers should begin with an abstract of not more than 100 words and should end with a brief concluding section. The title and section headings should be concise and descriptive. All measurements should be given in SI units. On acceptance of a manuscript, authors are asked to send the electronic source file of the final version together with a PDF copy produced using the same file. The publisher reserves the right to typeset material by conventional means if an author's file proves unsatisfactory.

Illustrations

Figures should be composed to occupy a single column (80mm) or two columns (166mm) after reduction. The preferred format for figure files is .eps or .tiff at resolution 1200 dpi for lines, 600 dpi for greyscale and 300 dpi for colour (which preferably should also be in CMYK – cyan magenta yellow black – format). However,

© CAMBRIDGE UNIVERSITY PRESS 2011

Cambridge University Press The Edinburgh Building, Cambridge CB2 8RU, United Kingdom 32 Avenue of the Americas, New York, NY 10013-2473, USA 477 Williamstown Road, Port Melbourne, VIC 3207, Australia Ruiz de Alarcón 13, 28014, Madrid, Spain Dock House, The Waterfront, Cape Town 8001, South Africa

Printed in the United Kingdom at the University Press, Cambridge

most standard image formats such as pct, ppm, png, psd, Word, ppt, CorelDraw, ChemDraw, AutoCAD can also be used, but not customized output of software not designed for publishing purposes such as Matlab, nor PDF. Figures to be printed in black and white must be submitted as black and white files.

Figures should be numbered consecutively, with Arabic numerals, have descriptive captions, and be mentioned in the text. A list of captions should be attached separately, and as far as possible, information relating to a figure should be placed in the caption rather than on the figure. Each figure should be clearly numbered. Photographs should be the same size as they will appear in the journal and should be selected to fit neatly into one column (80 mm) or two columns (166 mm). Photographs should be clearly identified and numbered as for line drawings.

Tables

Tables should be presented on separate sheets. A descriptive title should be given to each table. If possible, very wide tables should be avoided. Tables should be numbered consecutively in Roman numerals. Exceptionally lengthy tables may be summarized for publication with a note that fuller details can be obtained from the authors.

Equations

Mathematical equations should be typewritten, with subscripts and superscripts clearly indicated. All mathematical symbols will be set in italics unless otherwise indicated: symbols or letters to be set in Roman (upright) type should be marked clearly.

References

In the text, references are indicated by superior Arabic numbers (without brackets), and should be confined to published 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**, 393-399 (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.

Proof Reading

The corresponding author will receive PDF copies of page proofs for final proofreading. Only typographical or factual errors may be changed at proof stage. The publisher reserves the right to charge authors for correction of non-typographical errors. Authors are requested to return proofs within 48 hours by airmail. No page charge is made.

Offprints

No paper offprints are provided, but the corresponding author will be sent the pdf of the published article. Print offprints may be purchased at extra cost at proof stage.



Volume 29 Part 4 July 2011

Far infrared pedestrian detection and tracking for night driving, Daniel Olmeda , Arturo de la Escalera and José María Armingol	495
PD control with feedforward compensation for rigid robots actuated by brushless DC motors, R. V. Carrillo-Serrano, V. M. Hernández-Guzmán and V. Santibáñez	507
Optimization-based formation of autonomous mobile robots, Huan Zhang and Pubudu N. Pathirana	515
Human capability of discriminating relief-like 2D figures in tactile displaying, Masahiro Ohka, Hiroki Yoshino and Tetsu Miyaoka	527
Kinematic calibration of the 3-DOF parallel module of a 5-axis hybrid milling machine, Li-Ping Wang, Fu-Gui Xie, Xin-Jun Liu and Jinsong Wang	535
Experimental verification of antagonistic stiffness planning for a planar parallel mechanism with 2-DOF force redundancy, Sungcheul Lee, Sitae Kim, Woosung In, Moonki Kim, Jay I. Jeong and Jongwon Kim	547
Fault detection and isolation in cooperative mobile robots using multilayer architecture and dynamic observers, R. A. Carrasco, F. Núñez and A. Cipriano	555
A new method for isotropic analysis of limited DOF parallel manipulators with terminal constraints, Haibo Qu, Yuefa Fang and Sheng Guo	563
A worm-inspired new spatial hyper-redundant manipulator, Jaime Gallardo-Alvarado, Raúl Lesso-Arroyo and J. Santos García-Miranda	571
The relationship between controlled joint torque and end-effector force in underactuated robotic systems, Jaeheung Park	581
An optimization method for the reference trajectory of parametric excitation walking, Kouichi Taji, Yoshihisa Banno and Yuji Harata	585
Energy-efficient gait generation for biped robot based on the passive inverted pendulum model, Jian Li and Weidong Chen	595
Workspace formulation of planar wire-actuated parallel manipulators, Derek McColl and Leila Notash	607
Inverse kinematics by numerical and analytical cyclic coordinate descent, Anders Lau Olsen and Henrik Gordon Petersen	619
Generating efficient rigid biped running gaits with calculated take-off velocities, Q. Guo, C. J. B. Macnab and J. K. Pieper	627
Efficient walking with optimization for a planar biped walker with a torso by hip actuators and springs, Terumasa Narukawa , Masaki Takahashi and Kazuo Yoshida	641

Robotica now accepts submissions via Manuscript Central Go to http://mc.manuscriptcentral.com/cup/robotica

Cambridge Journals Online For further information about this journal please go to the journal website at: journals.cambridge.org/rob



