


VOL. 4 • 2016 • NO. 1



NETWORK SCIENCE

CAMBRIDGE
UNIVERSITY PRESS

Network Science Editorial Team

EDITORS

Ulrik Brandes, Computer Science and Mathematics, University of Konstanz, Germany

Ronald Breiger, Social and Political Science, University of Arizona, USA

Noshir Contractor, Communication, Management, and Computational Social Science, Northwestern University, USA

Filippo Menczer, Information Science, Indiana University, USA

Garry Robins, Psychology and Political Science, University of Melbourne, Australia

Jaideep Srivastava, Engineering and Web Science, University of Minnesota, USA

Thomas Valente, Public Health and Medicine, University of Southern California, USA

Fernando Vega-Redondo, Economics, Bocconi University, Italy

Alessandro Vespignani, Physics, Northeastern University, USA

Stanley Wasserman (Coordinating Editor), Statistics and Behavioral Science, Indiana University, USA

ASSOCIATE EDITORS

Sinan Aral, Information Science, Management, New York University, USA

Alain Barrat, Physics, CNRS, France

Yann Bramouille, Economics, Aix-Marseille University, France

Dirk Brockmann, Computer Science, Applied Mathematics, Northwestern University, USA

Nicholas Christakis, Sociology, Medicine, Public Health, Yale University, USA

Jonathon Cummings, Business, Duke University, USA

Padraig Cunningham, Computer Science, University College Dublin, Ireland

Matthew Elliott, Economics, California Institute of Technology, USA

Christos Faloutsos, Computer Science, Data Mining, Carnegie-Mellon University, USA

Katherine Faust, Sociology, University of California, Irvine, USA

James Fowler, Political Science, Public Health, Genetics, University of California, San Diego, USA

Andrea Galeotti, Economics, University of Essex, UK

David Hunter, Statistics, Pennsylvania State University, USA

Yoshihisa Kashima, Psychology, University of Melbourne, Australia

Peter Key, Mathematics, Microsoft Research, UK

Laura Koehly, Psychology, Public Health, National Institutes of Health, USA

Eric Kolaczyk, Statistics, Boston University, USA

David Krackhardt, Public Policy, Business, Carnegie-Mellon University, USA

David Lazer, Information Science, Political Science, Northeastern University, USA

Roger Leenders, Business, Organization Studies, Tilburg University, Netherlands

Kristina Lerman, Computer Science, ISI and University of Southern California, USA

Mark Lubell, Political Science, Environmental Policy, University of California, Davis, USA

Winter Mason, Psychology, Cognitive Science, Stevens Institute, USA

James Moody, Sociology, Duke University, USA

Sue Moon, Computer Science, Korea Advanced Institute of Science and Technology, Republic of Korea

Romualdo Pastor-Satorras, Mathematics, Physics, Polytechnic University of Catalonia, Spain

Bernice Pescosolido, Sociology, Indiana University, USA

Richard Rothenberg, Public Health, Epidemiology, Georgia State University, USA

Olaf Sporns, Psychology, Neuroscience, Indiana University, USA

Douglas Steinley, Psychology, Statistics, University of Missouri, USA

Adam Szeidl, Economics, Central European University, Hungary

Zoltan Toroczkai, Physics, University of Notre Dame, USA

Marco van der Leij, Economics, University of Amsterdam, Netherlands

MANAGING EDITOR

Ann McCranie, Sociology, Indiana University, USA

Network Science

Network Science is a new journal for a new discipline - one using the network paradigm, focusing on actors and relational linkages, to inform research, methodology, and applications from many fields across the natural, social, engineering and informational sciences. Given growing understanding of the interconnectedness and globalization of the world, network methods are an increasingly recognized way to research aspects of modern society along with the individuals, organizations, and other actors within it.

The discipline is ready for a comprehensive journal, open to papers from all relevant areas. *Network Science* is a defining work, shaping this new discipline. The journal welcomes contributions from researchers in all areas working on network theory, methods, and data.

SUBSCRIPTION INFORMATION

Network Science (ISSN: 2050-1242) is published four times per year, in March, June, September, and December by Cambridge University Press, 32 Avenue of the Americas, New York, NY 10013, USA.

The subscription price of Volume 4 (2016) including delivery by air where appropriate (but excluding VAT), is \$670.00 (£419.00) for institutions print and online; \$635.00 (£397.00) for institutions online only.

Orders, which must be accompanied by payment, may be sent to a bookseller, subscription agent or direct to the publisher: Cambridge University Press, Journals Fulfillment Department, 32 Avenue of the Americas, New York, NY 10013, USA; or Cambridge University Press, The Edinburgh Building, Shaftesbury Road, Cambridge CB2 8RU, England. Alternatively, you can place an order online at <journals.cambridge.org/nws>.

For single issues, please contact customer_service@cambridge.org.

ADVERTISING

For information on display ad sizes, rates, and deadlines for copy, please visit the journal homepage at <journals.cambridge.org/nws> or contact ad_sales_cambridge.org.

INTERNET ACCESS

Network Science is included in the Cambridge Journals Online service, which can be accessed at <journals.cambridge.org>. For information on other Cambridge titles, visit <www.cambridge.org>.

ISSN: 2050-1242

EISSN: 2050-1250

Copyright © Cambridge University Press 2016. All rights reserved. No part of this publication may be reproduced, in any form or by any means, electronic, photocopying, or otherwise, without permission in writing from Cambridge University Press. Policies, request forms and contacts are available at: <http://journals.cambridge.org/action/rightsAndPermissions>

Permission to copy (for users in the U.S.A.) is available from Copyright Clearance Center <http://www.copyright.com>, email: info@copyright.com.

Postmaster: Send address changes to *Network Science*, Cambridge University Press, 32 Avenue of the Americas, New York, NY 10013, USA.

NETWORK SCIENCE

Volume 4

Number 1

CONTENTS

Articles

- Selection and influence in cultural dynamics
DAVID KEMPE, JON KLEINBERG, SIGAL OREN AND ALEKSANDRS SLIVKINS 1
- Influence of “traveling” youth and substance use behaviors in the social networks of homeless youth
MEE YOUNG UM, ERIC RICE, HARMONY RHOADES, HAILEY WINETROBE AND NATALIE BRACKEN 28
- Mixed-membership of experts stochastic blockmodel
ARTHUR WHITE AND THOMAS BRENDAN MURPHY 48
- Homophily, influence and the decay of segregation in self-organizing networks
ADAM DOUGLAS HENRY, DIETER MITSCHE AND PAWEŁ PRAŁAT 81
- An improved MCMC algorithm for generating random graphs from constrained distributions
TREVOR TAO 117