Michael T. Gastner

Contact Information

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Professional Profile

Applied mathematician and data scientist with a specialisation in data visualisation, cartography, network analysis and mathematical modelling. Originator of the go-cart.io project, which makes cartogram generation easy and user-friendly. Internationally experienced educator at the undergraduate and postgraduate level. I regularly publish in peer-reviewed journals and have a contract with CRC Press to write a textbook titled "Data Visualisation with R, RStudio and the Tidyverse".

Academic Positions

Current
Since Jan 2023

Singapore Institute of Technology: Associate Professor
Information and Communications Technology

The Singapore Institute of Technology is a key university in Singapore that applies an integrated applied learning and research approach to contribute to the economy and society. I teach and design courses in computer science and perform industry-relevant research. I also supervise projects in the Integrated Work Study Programme as well as final-year projects.

Jul 2015
Dec 2022

Yale-NUS College (Singapore): Assistant Professor
Mathematical, Computational and Statistical Sciences

Yale-NUS was a selective liberal arts and science college. I supervised undergraduate research culminating in "Capstone Projects" in the students' senior year. Many projects led to peer-reviewed publications with students. My research was supported by competitive grants from the Singapore Ministry of Education, in which I was the Principal Investigator (total award > S$ 730,000). I also taught and designed modules for the "Common Curriculum" and the Data Science programme.

Jun 2015 –
Nov 2013

Hungarian Academy of Sciences (Budapest): Marie Curie Fellow
Institute of Technical Physics and Materials Science

Independent research in statistical physics, network analysis and game theory. This fellowship was supported by the European Commission (€ 184,000).

Oct 2013 –
Sep 2012

University of Bristol (UK): Lecturer
Department of Engineering Mathematics

Independent research in applied mathematics. Lecturer for undergraduate and postgraduate courses. My research was supported by the grant "Building Global Engagements in Research" (£ 3440).

Aug 2012 –
Dec 2009

Imperial College (London): Junior Research Fellow
Mathematics Department

Independent research in complexity and network science. Lecturer for postgraduate courses. The fellowship (£ 122,000) was awarded by Imperial College after a worldwide search for early-career researchers and a rigorous three-stage review process.

Academic positions (continued)

Nov 2009 – May 2008 | Carl von Ossietzky Universität, Oldenburg (Germany): Research Fellow
Institute for Chemistry and Biology of the Marine Environment
Mathematical modelling of bioinvasion mediated by the network of cargo ships, supported by a Computational Science Fellowship of the Volkswagen Foundation (€ 201,000).

May 2008 – Oct 2005 | Santa Fe Institute (USA): Postdoctoral Fellow
Independent research in complex systems and interdisciplinary science. The fellowship paid $ 12,000 for research expenses in addition to the salary.

Qualifications

Aug 2005 – Sep 2000 | University of Michigan (USA): Ph.D.
Physics Department | Advisor: Prof. M. E. J. Newman
Thesis: "Spatial distributions—density-equalizing maps, facility location, and two-dimensional networks".
Supported by Max Kade Foundation Scholarship and Rackham Dissertation Grant.

Jul 2000 – Oct 1997 | Albert-Ludwigs-Universität Freiburg (Germany): Vordiplom
Physics Department
Average mark: 1.0 (best possible mark on a scale from 1.0 to 6.0)

Selected Publications

See page 11 for complete publication list

Interactive Cartograms | I. K. Duncan, S. Tingsheng, S. T. Perrault and **M. T. Gastner**
Task-based effectiveness of interactive contiguous area cartograms
IEEE Trans. Vis. Comput. Graph. 27(3):2136–2152 (2021)
DOI: 10.1109/TVCG.2020.3041745
Cartograms are map-based data visualisations in which the area of each map region is proportional to an associated numeric data value (e.g. population or gross domestic product). Because of their distorted appearance, cartograms are sometimes criticised for being difficult to read. We conducted an experiment to evaluate whether cartograms are more legible if they are accompanied by interactive animations, linked brushing and infotips. We found that interactivity has the potential to make cartograms accessible even for those readers who are unfamiliar with interactive computer graphics or do not have a prior affinity to working with maps.

Fast Cartogram Algorithm | **M. T. Gastner**, V. Seguy and P. More
Fast flow-based algorithm for creating density-equalizing map projections
Proc. Natl. Acad. Sci. U.S.A. 115(10):E2156–E2164 (2018)
DOI: 10.1073/pnas.1712674115
Prior to this publication, cartogram algorithms had generally been cumbersome or slow. Here we described and benchmarked a new algorithm that can compute cartograms in a matter of seconds.

Network Analysis | P. Kaluza, A. Kölzsch, **M. T. Gastner** and B. Blasius
The complex network of global cargo ship movements
J. Royal Soc. Interface 7(48):1093–1103 (2010)
DOI: 10.1098/rsif.2009.0495
The global network of merchant ships plays a crucial role in human mobility, the exchange of goods and the spread of invasive species. We used information about the itineraries of cargo ships in 2007 to construct and analyse the network of links between ports.

Selected Publications (continued)

Diffusion Cartogram Algorithm

M. T. Gastner and M. E. J. Newman
Diffusion-based method for producing density-equalizing maps
Proc. Natl. Acad. Sci. U.S.A. 101(20):7499–7504 (2004)
DOI: 10.1073/pnas.0400280101

We presented a technique to create cartograms based on a physics-inspired model in which a spatial density undergoes Fickian diffusion. As the density equilibrates, it creates a velocity field that defines a continuous map projection. The cartogram is constructed by applying this map projection to the vertices of the multipolygons that represent the geographic regions.

Teaching experience

Data Analysis and Visualization with R
Yale-NUS College (2016–2022)

This course teaches how to use the programming language R for data analysis and visualisation. Starting from the fundamentals of R, students learn how to write their own R programs. Hands-on instructions show how to speed up programming with the integrated development environment RStudio and the Tidyverse suite of R packages. Real-world data sets are used to demonstrate how to extract information and present it effectively (e.g. as networks or geographic maps). This course is based on my eponymous textbook that is scheduled to be published by CRC Press in 2024.

Quantitative Reasoning
Yale-NUS College (2016–2021)

This "Common Curriculum" course aims to develop the students' skills in logical and statistical reasoning so that they become critical and informed readers of quantitative data. Students learn to criticise and question empirical claims, support them with logical arguments and address real-life problems by gathering and visually representing quantitative data. The course applies the pedagogy of team-based learning to ensure that students who bring diverse talents and backgrounds to the course can learn together and from each other.

Monte Carlo Simulations in Science and Statistics
Yale-NUS College (2017)

This course teaches how to write elegant and efficient Monte Carlo simulations for concrete real-world examples. Students also learn the theoretical foundations of pseudo-random number generators, Markov chain Monte Carlo methods and the Metropolis-Hastings algorithm.

Stochastic Processes and Models
Yale-NUS College (2016–2017)

In this course, students learn the mathematics behind the most common models of stochastic processes: Markov chains, Poisson and renewal processes, and queuing theory. Students learn how to prove the most important mathematical results and apply them to realistic problems.

Evolutionary Game Theory
Eötvös Loránd University, Budapest (2014)

In this course, students learn basic concepts of evolutionary game theory: payoff matrix, pure and mixed strategies, different notions of equilibria and their stability.

Engineering Mathematics
University of Bristol (2013)

This two-semester course aims to bring all students entering the Faculty of Engineering up to a common standard in mathematics. The course contains those elements of classical engineering mathematics that universally underpin the formation of the professional engineer. Topics include algebra, analysis, calculus, differential equations, probability and statistics.

Teaching experience (continued)

Networks: Theory and Applications
Imperial College London (2011)
This course introduces the mathematical theory of networks with applications to social networks, the Internet, transportation and biology. Topics include graph theory, algorithms and mathematical models of networks, especially random graph models. The objective is to develop the mathematics of network-driven processes (e.g. traffic flows, epidemiology and web search engines) and apply the theory to real data.

I have also taught the following courses.

- *Statistical Computing*, Yale-NUS College (2016)
- *Statistical Programming*, Yale-NUS College (2015)
- *Network Flow Algorithms*, University of Bristol (2012)
- *PhD school "Networks and Medical Imaging"*, University of Namur, Belgium (2012)
- *Stochastic Spatial Models in Ecology*, Imperial College London (2012)
- *Mathematics I for Civil Engineers*, Imperial College London (2012)
- *Networks Winter School*, University of Warwick (2011)
- *Biological Modelling*, Universität Oldenburg, Germany (2008)
- *Graduate Workshop in Social Science*, Santa Fe Institute, USA (2006)
- Graduate Student Instructor, University of Michigan (2001–2003)
  - Introductory Mechanics and Sound Laboratory
  - Introductory Electricity and Light Laboratory
  - Elementary Laboratory II (Electricity and Magnetism)

Awards and Fellowships

Yale-NUS College Annual Research Recognition Award (2021)
Awarded for faculty-student collaboration.
Student recipients: Ian K. Duncan and S. Tingsheng (S$ 5000 research grant + S$ 500 prize for each recipient)

FP7 Marie Curie Fellowship (2013–2015)
Competitive intra-European fellowship (total support: € 184,000)

Imperial College Junior Research Fellowship (2009–2012)
Independent fellowship that aims to select world-class early-career researchers through a rigorous three-stage review process in open competition (total support: £ 122,000)

Computational Science Fellowship of the German Volkswagen Foundation (2009)
Independent fellowship that supports junior researchers in theoretical and computer-based disciplines, selected by an international review panel (total support: € 201,000)

Wirt and Mary Cornwell Prize (2004)
Awarded to Ph.D. students who have "demonstrated greatest intellectual curiosity, given most promise of original study and creative work" ($ 10,000 cash award)

Postdoctoral Fellowship, Santa Fe Institute (2005–2008)
Highly competitive fellowship that aims to "prepare fellows to be leaders in transdisciplinary science" (salary + $ 12,000 research expenses)

Max Kade Foundation Scholarship (2000–2001)
Competitive fellowship to promote German-US educational exchange (tuition fees + monthly stipend)

Research Grants

Yale-NUS Special Pockets Research Grant (2022)
"Connecting metadata to cartograms displayed on internet-enabled devices" (S$ 1500)

Singapore Ministry of Education Academic Research Fund Tier 2 (2022–2025)
"Designing mobile-friendly cartograms for visualising geospatial data" (S$ 649,480)

Yale-NUS Special Pockets Research Grant (2021)
"Automatic label placement in computer-generated cartograms" (S$ 1500)

Yale-NUS Special Pockets Research Grant (2021)
"Topological colouring algorithm for cartograms" (S$ 1500)

Yale-NUS Special Pockets Research Grant (2020)
"Implementing topology-aware cartogram software" (S$ 1500)

Singapore Ministry of Education Academic Research Fund Tier 1 (2019–2022)
"Developing the web application go-cart.io for generating cartograms" (S$ 86,811)
Yale-NUS Research Cluster Seminar Grant (2016)
S$ 19,600 support for workshops and conferences

Yale-NUS Startup Grant (2016–2020)
S$ 60,000 for research on networks and cartography

Building Global Engagements in Research (2012–2013)
Competitively awarded internal responsive mode funding at the University of Bristol (£ 3440)

Rackham Dissertation Grant (2005)
Awarded by the University of Michigan for exceptionally promising Ph.D. dissertation projects (tuition fees + monthly stipend)

Invited positions

Dec 2018 – Oct 2018	Hungarian Academy of Sciences (Budapest): Visiting Senior Research Fellow *Center for Social Sciences, RECENS research group*
May 2008 – Jan 2008	University of New Mexico (USA): Visiting Postdoctoral Researcher *Department of Computer Science*

Seminars, Conference Presentations and Workshops

Keynote Speeches

Sep 2022	*Teaching data visualization to undergraduate students* 18th International Conference on Geoinformation and Cartography, Selce, Croatia
Dec 2018	*A fast flow-based algorithm for creating density-equalizing map projections* 3rd Asia-Pacific Conference on Complex Systems Design and Management, Singapore

Seminars, Conference Presentations and Workshops (continued)

Other Invited Talks since 2018

Jun 2023	*Area cartograms of Singapore* Official Speaker at the Launch of the Data Arcade Tournament 2023, organised by GovTech Singapore
Dec 2022	*Accelerating the calculation of optimally smooth pycnophylactic interpolations* Seminar, Workshop on Optimization in the Big Data Era, Institute for Mathematical Sciences, Singapore
Nov 2022	*Remapping data: visualizing geospatial statistics using cartograms* Seminar, Applied and Computational Mathematics, University of Wisconsin, Madison
Jul 2022	*Cartograms: geographic maps reimagined* Seminar, Infocomm Technology, Singapore Institute of Technology
Jun 2021	*Cartograms for spatiotemporal visualization* Workshop on Data Science and Curation: Spatial Data Science, Indian Statistical Institute, Bengaluru
Jun 2021	*Cartograms: the past, the present and the future* Colloquium, Institute for Geography, University of Augsburg, Germany
Oct 2020	*Conveying geospatial information with contiguous area cartograms* Seminar, Biology Department, Hong Kong Baptist University
Mar 2020	*Cartograms: geographic maps reimagined* Seminar, Computer Science Department, University of Iceland, Reykjavik
Feb 2020	*Bringing cartograms to the masses* Complexity Community Sharing Session, Nanyang Technological University, Singapore
Jan 2020	*Contiguous area cartograms* Seminar, Geography Department, University of Zurich, Switzerland
Oct 2019	*Contiguous area cartograms for data visualization and analysis* Satellite meeting: Extracting and analysing networks from spatio-temporal data, Conference on Complex Systems, Singapore
Sep 2019	*Network analysis with R* Workshop on Complex Networks and Persistent Homology, National University of Malaysia, Bangi
Oct 2018	*Consensus time in a voter model with concealed and publicly expressed opinions* Seminar, "Lendület" Research Center for Educational and Network Studies (RECENS), Hungarian Academy of Sciences, Budapest
Oct 2018	*Voter model with concealed and publicly expressed opinions* Complexity and Networks Group, Imperial College London, UK
Jan 2018	*A fast flow-based algorithm for creating density-equalizing map projections* Complexity Community Sharing Session, Nanyang Technological University, Singapore

Seminars, Conference Presentations and Workshops (continued)

Recent Contributed Conference Talks

Sep 2023	*Topology-aware line densification for reprojected curves on maps* 19th International Conference on Geoinformation and Cartography, Zadar, Croatia
Aug 2023	*Topology-Aware Algorithm for Constructing Cartograms from Density-Equalising Map Projections* 10th International Congress on Industrial and Applied Mathematics, Tokyo, Japan
Jun 2022	*Motivating good practices for the creation of contiguous area cartograms* International Conference on Cartography and GIS, Nessebar, Bulgaria
Dec 2021	*Balancing Shape Distortions and Contiguity in Cartograms* International Cartographic Conference, Florence, Italy
Oct 2021	*Task-Based effectiveness of interactive contiguous area cartograms* IEEE VIS: Visualization and Visual Analytics, virtual conference
Sep 2020	*Beyond Fortune 500: Women in a global network of directors* NetSci, Rome, Italy
Dec 2019	*Mean consensus time of the voter model on networks partitioned into two cliques of arbitrary sizes* Complex Networks, Lisbon, Portugal
Oct 2019	*Mean consensus time of the voter model on networks with two cliques* Conference on Complex Systems, Singapore
Jul 2019	*go-cart.io: a web application for generating contiguous cartograms* International Cartographic Conference, Tokyo, Japan
Sep 2018	*A voter model with concealed and publicly expressed opinions* Conference on Complex Systems, Thessaloniki, Greece
Jul 2018	*Implementing a fast flow-based algorithm for creating cartograms* Data Science, Statistics and Visualization, Vienna, Austria

Selected Media Coverage

About my work on cartograms

> *Sage Perspectives* (7 May 2021)
> Everybody is talking about vaccines, but who on earth gets them?
> https://tinyurl.com/talkingAboutVaccines

> *Latest @ Yale-NUS* (16 Apr 2021)
> Faculty-student research collaboration tackles inequality in vaccine distribution
> https://www.yale-nus.edu.sg/newsroom/faculty-student-research-collaboration-tackles-inequality-in-vaccine-distribution/

> *Der Spiegel* (4 Apr 2021)
> So haben Sie die Welt noch nicht gesehen
> https://www.spiegel.de/ausland/die-erde-in-karten-so-haben-sie-die-welt-noch-nicht-gesehen-a-4b03cf99-672c-41f1-a846-1cee641215dd

Selected Media Coverage (continued)

Latest @ Yale-NUS (4 Apr 2018)
Yale-NUS faculty member and student collaborate on cartographic research
https://www.yale-nus.edu.sg/newsroom/4-april-2018-yale-nus-faculty-member-and-student-collaborate-on-cartographic-research/

Nature (15 Feb 2006)
A popular perspective
https://doi.org/10.1038/439800a

The Guardian (16 Nov 2004)
The altered states
https://www.theguardian.com/world/2004/nov/16/uselections2004.comment

Washington Post (13 Nov 2004)
Election map makers, exercising some latitude
https://www.washingtonpost.com/wp-dyn/articles/A46719-2004Nov12.html

CNN (12 Nov 2004)
Paula Zahn now
http://edition.cnn.com/TRANSCRIPTS/0411/12/pzn.01.html

About my work on opinion formation

GNT, Brazilian television (17 Mar 2021)
Saia Justa
https://michaelgastner.com/videos/VT_HIPOCRISIA_GNT.mp4

Physics World (12 Dec 2019)
Voter model examines how opinions spread between social networks
https://physicsworld.com/a/voter-model-examines-how-opinions-spread-between-social-networks/

Cordis, European Commission (25 Aug 2016)
A game theoretic perspective on network dynamics
https://www.cordis.europa.eu/result/rcn/188386_en.html

About my work on transport networks

Hakai Magazine (23 Sep 2019)
The ballast of colonization
https://www.hakaimagazine.com/ballast-podcast/

ARD, German public television (19 Jun 2014)
Wissen vor Acht
https://web.archive.org/web/20170408183354/http://www.daserste.de/information/wissen-kultur/wissen-vor-acht-natur/sendung/wissen-vor-acht-natur-344.html

ZDF, German public television (3 Jun 2013)
Deutschland von oben 3: Fluss (beginning at minute 38:00)
https://www.zdf.de/dokumentation/terra-x/terra-x-deutsche-gewaesser-von-oben-100.html

Wall Street Journal (7 May 2013)
Roving sea squirts, mussels threaten top Asian ports
https://www.wsj.com/articles/BL-CJB-17670

Selected Media Coverage (continued)

> *Der Spiegel* (6 May 2013)
> Eingeschleppte Arten: Forscher kartieren Wege der Bioinvasoren
> https://www.spiegel.de/wissenschaft/natur/eingeschleppte-arten-forscher-kartieren-routen-der-bioninvasoren-a-898178.html#ref=rss

> *BBC News* (5 May 2013)
> Scientists map global routes of ship-borne invasive species
> https://www.bbc.co.uk/news/science-environment-22397076

> *Scientific American* (1 Feb 2009)
> Removing roads and traffic lights speeds urban travel
> https://www.scientificamerican.com/article/removing-roads-and-traffic-lights/

> *The Atlantic* (1 Dec 2008)
> Share the road
> https://www.theatlantic.com/magazine/archive/2008/12/quick-study/307155/

> *The Economist* (11 Sep 2008)
> Queuing conundrums
> https://www.economist.com/science-and-technology/2008/09/11/queuing-conundrums

Research supervision

Yale-NUS College (Capstone theses)

- Yau Yen Ching: Evaluating the Effectiveness of Different Cartogram Designs for Visualising Contiguity (2022)
- Fung Lee Tat Kelvin: Effectiveness of Cartogram Legend and Grid Lines (2021)
- Matthias E. Goh: Topology-Aware Construction of Density-equalising Map Projections (2021)
- Ian K. Duncan: An Evaluation of the Usability of the Web-Based Cartogram Generation Tool go-cart.io (2021)
- Kota Ishida: Two-community Voter Model (2020)
- Shi Tingsheng: go-cart.io—Implementing Good Practices for Generating Contiguous Area Cartograms Online (2020)
- Adam Y. M. Tonks: Reducing Regional Distortions in Flow-based Algorithm Cartograms (2018)
- Evan Asava Aree: A Simulation Model and Web App as a Research and Pedagogical Tool to Understand Succession in Secondary Forests (2018)
- Anna Evtushenko: Networks of Interlocking Directorates, a Global Approach (2017)

Imperial College London (Master of Science theses)

- Elias Bamis: Constrained Gravity Models for Network Flows (2012)
- Vivien Seguy: Cartograms (2011)
- Ahmed-Amine Homman: Percolation Thresholds on Correlated Lattices and Finite-Size Scaling (2011)

Service to the Research Community

Appointed membership

- International Cartographic Association Commission on Map Projections (since 2019)

Peer reviewing

- Academic Editor: PLOS ONE (since 2022)
- Review Editor: Models in Ecology and Evolution (special section of Frontiers in Ecology and Evolution) (since 2022)
- Book proposal review: CRC Press (Taylor and Francis Group)

Service to the Research Community (continued)

- Reviews for journals:

Interdisciplinary:	Chaos, Journal of the Royal Society Interface, Nature Communications, PLOS ONE, Royal Society Open Science, Scientific Reports
Physics:	EPL (Europhysics Letters), Journal of Physics A, Journal of Statistical Physics, Networks and Heterogeneous Media, New Journal of Physics, Physical Review Letters, Physical Review E, Physics Letters A
Computer science:	ACM Transactions on Spatial Algorithms and Systems, Digital, IEEE Transactions on Network Science and Engineering, IEEE Transactions on Visualization and Computer Graphics, IEEE VIS, Information Visualization, Knowledge-Based Systems, Mathematics and Computers in Simulation
Geography:	Applied Geomatics, Cartographic Journal, Cartography and Geographic Information Science, Cartography and Geoinformation, Environment and Planning B, Geo-spatial Information Science, Health and Place, International Journal of Geographical Information Science, Spatial Statistics
Biology:	Ecography, Ecological Modelling, Frontiers in Ecology and Evolution, Insectes Sociaux, International Journal of Health Geographics, Global Ecology and Biogeography, PLOS Computational Biology
Miscellaneous:	Journal of Advanced Transportation, Mathematical Methods in the Applied Sciences

Conference organisation

- Programme Committee:
  - 12th International Conference on Complex Networks and Their Application (Nice, 2023)
  - 18th International Conference on Geoinformation and Cartography (Zagreb, 2022)
  - 11th International Conference on Complex Networks and Their Application (Palermo, 2022)
  - 9th International Conference on Complex Networks and Their Applications (Madrid, 2020)
  - European Conference on Complex Systems (Oxford, 2006)
- Organising Committee: Frontiers in Network Science (Berlin, 2009)
- Chaired Sessions:
  - Conference on Complex Systems (Singapore, 2019)
  - International Cartographic Conference (Tokyo, 2019)

Outreach

- Research supervision of high school student Ananya Shah (Singapore American School, 2021)
- Presentation at Singapore Ministry of National Development: "A Fast Flow-Based Algorithm for Creating Density-Equalizing Map Projections" (2019)
- Expert consultation for research project of secondary-school students (Raffles Institute, Singapore, 2017)

Appendix: Complete Publication List

Peer-reviewed journal articles

K. L. T. Fung, S. T. Perrault and **M. T. Gastner**
Effectiveness of area-to-value legends and grid lines in contiguous area cartograms
IEEE Trans. Vis. Comput. Graph., early access article, no. 01, pp. 1-18, 5555 (2023)
DOI: 10.48550/arXiv.2201.02995

M. T. Gastner
Teaching data visualisation and basic map-making skills at a liberal arts college
Cartogr. Geoinformation (Kartografija i Geoinformacije) 22(39):43–59 (2023)
DOI: 10.32909/kg.22.39.3

M. T. Gastner, N. Z. Miaji and A. Singhania
Smooth pycnophylactic interpolation produced by density-equalising map projections
Cartogr. Geoinformation (Kartografija i Geoinformacije) 21(37):60–69 (2022)
DOI: 10.32909/kg.21.37.3

G. Ódor, **M. T. Gastner**, J. Kelling and G. Deco
Modelling on the very large-scale connectome
J. Phys. Complex. 2(4):045002 (2021)
DOI: 10.1088/2632-072X/ac266c

K. Ishida, B. Oborny and **M. T. Gastner**
Agent-based neutral competition in two-community networks
Phys. Rev. E 104(2):024308 (2021)
DOI: 10.1103/PhysRevE.104.024308

Y. C. Yau and **M. T. Gastner**
Mapping the inequality of the global distribution of seasonal influenza vaccine
Environ. Plan. A 53(6):1249–1252 (2021)
DOI: 10.1177/0308518X21998356

I. K. Duncan, S. Tingsheng, S. T. Perrault and **M. T. Gastner**
Task-based effectiveness of interactive contiguous area cartograms
IEEE Trans. Vis. Comput. Graph. 27(3):2136–2152 (2021)
DOI: 10.1109/TVCG.2020.3041745

M. T. Gastner and K. Ishida
Voter model on networks partitioned into two cliques of arbitrary sizes
J. Phys. A: Math. Theor. 52(50):505701 (2019)
DOI: 10.1088/1751-8121/ab542f

M. T. Gastner, K. Takács, M. Gulyás, Z. Szvetelszky and B. Oborny
The impact of hypocrisy on opinion formation: a dynamic model
PLOS ONE 14(6):e0218729 (2019)
DOI: 10.1371/journal.pone.0218729

M. T. Gastner, B. Oborny and M. Gulyás
Consensus time in a voter model with concealed and publicly expressed opinions
J. Stat. Mech. Theory Exp. 2018(6):063401 (2018)
DOI: 10.1088/1742-5468/aac14a

M. T. Gastner, V. Seguy and P. More
Fast flow-based algorithm for creating density-equalizing map projections
Proc. Natl. Acad. Sci. U.S.A. 115(10):E2156–E2164 (2018)
DOI: 10.1073/pnas.1712674115

Appendix: Complete Publication List (continued)

M. T. Gastner and G. Ódor
The topology of large Open Connectome networks for the human brain
Sci. Rep. 6(6):27249 (2016)
DOI: 10.1038/srep27249

M. T. Gastner
The Ising chain constrained to an even or odd number of positive spins
J. Stat. Mech. Theory Exp. 2015(3):P03004 (2015)
DOI: 10.1088/1742-5468/2015/03/P03004

M. T. Gastner, N. Markou, G. Pruessner and M. Draief
Opinion formation models on a gradient
PLOS ONE 9(12):e114088 (2014)
DOI: 10.1371/journal.pone.0114088

V. Salnikov, D. Schien, H. Youn, R. Lambiotte and **M. T. Gastner**
The geography and carbon footprint of mobile phone use in Côte d'Ivoire
EPJ Data Sci. 3(1):3 (2014)
DOI: 10.1140/epjds21

H. Seebens, **M. T. Gastner** and B. Blasius
The risk of marine bioinvasion caused by global shipping
Ecol. Lett. 16(6):782–790 (2013)
DOI: 10.1111/ele.12111

M. T. Gastner and B. Oborny
The geometry of percolation fronts in two-dimensional lattices with spatially varying densities
New J. Phys. 14(10):103019 (2012)
DOI: 10.1088/1367-2630/14/10/103019

M. T. Gastner
Scaling and entropy in p-median facility location along a line
Phys. Rev. E 84(3):036112 (2011)
DOI: 10.1103/PhysRevE.84.036112

M. T. Gastner, B. Oborny, A. B. Ryabov and B. Blasius
Changes in the gradient percolation transition caused by an Allee effect
Phys. Rev. Lett. 106(12):128103 (2011)
DOI: 10.1103/PhysRevLett.106.128103

P. Kaluza, A. Kölzsch, **M. T. Gastner** and B. Blasius
The complex network of global cargo ship movements
J. Royal Soc. Interface 7(48):1093–1103 (2010)
DOI: 10.1098/rsif.2009.0495

M. T. Gastner, B. Oborny, D. K. Zimmermann and G. Pruessner
Transition from connected to fragmented vegetation across an environmental gradient: Scaling laws in ecotone geometry
Am. Nat. 174(1):E23–E39 (2009)
DOI: 10.1086/599292

H. Youn, **M. T. Gastner** and H. Jeong
Price of anarchy in transportation networks: Efficiency and optimality control
Phys. Rev. Lett. 101(12):128701 (2008)
DOI: 10.1103/PhysRevLett.101.128701

Appendix: Complete Publication List (continued)

M. T. Gastner and M. E. J. Newman
Optimal design of spatial distribution networks
Phys. Rev. E 74(1):016117 (2006)
DOI: 10.1103/PhysRevE.74.016117

M. T. Gastner and M. E. J. Newman
The spatial structure of networks
Eur. Phys. J. B 49(2):247–252 (2006)
DOI: 10.1140/epjb/e2006-00046-8

M. T. Gastner and M. E. J. Newman
Shape and efficiency in spatial distribution networks
J. Stat. Mech. Theory Exp. 2006(1):P01015 (2006)
DOI: 10.1088/1742-5468/2006/01/P01015

M. T. Gastner, C. R. Shalizi and M. E. J. Newman
Maps and cartograms of the 2004 US presidential election results
Adv. Complex Syst. 8(1):117–123 (2005)
DOI: 10.1142/S0219525905000397

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