

ΙΩΑΝΝΗΣ Κ. ΔΗΜΗΤΡΙΟΥ (I. C. Demetriou). Μαθηματικός, M.Phil. Computer Science, Ph.D. Department of Applied Mathematics and Theoretical Physics, University of Cambridge.



Είναι Καθηγητής Μαθηματικών – Πληροφορικής, του Τμήματος Οικονομικών Επιστημών, Διετέλεσε Πρόεδρος του Τμήματος (2009-2014) και Συγκλητικός, Αναπληρωτής Πρόεδρος (2007-2009), διευθυντής του Τομέα Μαθηματικών – Πληροφορικής (2000-2009), επιστημονικός υπεύθυνος του Εργαστηρίου Πληροφορικής της Σχολής Νομικών, Οικονομικών και Πολιτικών Επιστημών (1995-2003-2009) και Αναπληρωτής Διευθυντής (1997-2008) και Διευθυντής (2008-2010) του προγράμματος μεταπτυχιακών σπουδών Εφαρμοσμένης Οικονομικής και Χρηματοοικονομικής. Από το 2015, είναι Διευθυντής του μεταπτυχιακού «Διοίκηση, Αναλυτική και Πληροφοριακά Συστήματα Επιχειρήσεων (MSc in Business Administration, Analytics and Information Systems)». Στο Τμήμα του έχει ευρύ και πολύπλευρο διοικητικό και οργανωτικό έργο.

Διδάσκει στο προπτυχιακό μαθηματικά και πληροφορική σε διάφορα επίπεδα και στα μεταπτυχιακά μαθηματικό προγραμματισμό, management science/operations research, analytics and data science και μαθηματικά χρηματοοικονομικών παραγώγων. Δίδαξε ως επισκέπτης καθηγητής (1990-1996) στο Τμήμα Πληροφορικής του Οικονομικού Πανεπιστημίου Αθηνών προγραμματισμό, γραφική υπολογιστών και επικοινωνία ανθρώπου – υπολογιστή. Συνεργάτης του Ελληνικού Ανοικτού Πανεπιστημίου στις θεματικές ενότητες MBA60 (2008 - 16) και ΔΕΟ13 (2016 -).

Τα ερευνητικά του ενδιαφέροντα αφορούν στην ανάπτυξη θεωρίας και αλγόριθμων αριθμητικών προσεγγίσεων και βελτιστοποίησης συνοδευόμενων από την ανάπτυξη λογισμικού γενικής χρήσης. Η έρευνά του εστιάζει ειδικά στη λείανση δεδομένων με διηρημένες διαφορές βρίσκοντας εφαρμογές, μεταξύ άλλων, στην αξονική τομογραφία, την επεξεργασία εικόνας, την επιχειρησιακή έρευνα και την οικονομετρία. Έχει δημοσιεύσει 90 ερευνητικές εργασίες σε περιοδικά, τόμους ερευνητικών συλλογών και πρακτικά συνεδρίων και έχει συγγράψει 10 πανεπιστημιακά βοηθήματα από το 1990. Εργασίες του έχουν δημοσιευθεί στα περιοδικά IMA J Numer Anal (1991×2), Intl Trans Oper Res Societies (1994), Math of Computation (1990, 1995), Appl Numer Math (2001), JCAM (2002, 2004), Comp Optimization and Appl (2004), Computer Physics Comm (CPC, 1997, 2003, 2006), ACM Trans On Math Software (1995, 2007), Intl J. of Applied Mathematics (2008×2, 2009, 2013), Computational Statistics and Data Anal (2005, 2010), Optimization Methods and Software (2020). Έχει αναπτύξει τα πακέτα λογισμικού L2CXFT, CXFTV2, L1PMA, L2CXCXV και L2WPMA που είναι εγκατεστημένα στις επιστημονικές βιβλιοθήκες Collected Algorithms of the ACM και Computer Physics Communications.

Το 2019 κυκλοφόρησε ο τόμος: Approximation and Optimization, Algorithms, Complexity and Applications (editors I.C. Demetriou and P.M. Pardalos). Springer Optimization and its Applications, Springer International Publishing Switzerland, 2019, ISBN10 3030127664.

Σπούδασε ως υπότροφος του Ιδρύματος Κρατικών Υποτροφιών προ και μεταπτυχιακά· έλαβε το J. T. Knight Price στα μαθηματικά του Πανεπιστημίου του Cambridge για ερευνητική μονογραφία του ως μεταπτυχιακός φοιτητής· ερευνητική εργασία του επελέγη από την Ελληνική Εταιρεία Επιχειρησιακών Ερευνών ως «National Contribution of Greece to IFORS 93»· ερευνητική εργασία του βραβεύτηκε από την International Association of Engineers (World Congress on Engineering 2007, Imperial College, London). Επίσης, έλαβε το «Best paper award of Computational Statistics and Data Engineering 2008 & 2013» του World Congress on Engineering, Imperial College, το «Certificate of Merit 2012, 2014, 2015», the best paper award of the 2018 Conference on Bioinformatics (IMECS) και the best paper award of the 2018 Conference on Data Engineering (IAENG).

Έχει μετάσχει σε διεθνείς επιτροπές διαπίστευσης τριτοβάθμιας εκπαίδευσης και σε εθνικές επιτροπές αξιολόγησης πληροφοριακών συστημάτων. Είναι μέλος επιστημονικών και οργανωτικών επιτροπών εθνικών και διεθνών συνεδρίων. Μέλος του editorial board του περιοδικού “SN Operations Research Forum”, Springer Nature. Έχει δώσει πολλές διαλέξεις σε συνέδρια και πανεπιστήμια. Το βιογραφικό του έχει εμφανισθεί στις διεθνείς εκδόσεις Who’s Who in the World, Who’s Who in Science and Engineering, Dictionary of International Biography, Pembroke College Who’s Who (Univ. of Cambridge).

Δεκέμβριος 2020

Resume Summary of

IOANNIS C. DEMETRIOU

Degree in Mathematics, M.Phil. Computer Science, Ph.D. from the Department of Applied Mathematics and Theoretical Physics, University of Cambridge; he has studied as a grantee of the State Scholarship Foundation of Greece. Life member of Pembroke College Cambridge.

Professor of Mathematics and Informatics, Department of Economics at the National and Kapodistrian University of Athens; he headed this department, where he developed IT laboratories, organized programmes of studies, improved infrastructure, supported the development of teaching and research staff and established new faculty premises. Currently, Director of the MSc course in Business Administration, Analytics and Information Systems.

He has an extended repertoire of undergraduate, graduate and doctoral level courses in applied mathematics, information systems, computing, operational research and management science, data analytics and machine learning. He has taught computer graphics and human computer interaction at the Athens University of Economics and Business, and also taught quantitative methods at the MBA and DEO programmes of Hellenic Open University.

In his research, he develops theory and algorithms for numerical approximation and optimization calculations accompanied by software development for general use, which focus on data smoothing by sign changes in the divided differences and its applications to science, engineering, medicine and economics. He has identified procedures that solve routinely some challenging combinatorial optimization problems. He has published over 90 research papers in scientific journals, conference proceedings and volumes. He has developed Fortran software packages that are accessible to the public through the scientific library systems of the ACM Transactions on Mathematics Software and Computer Physics Communications. As a program developer, he worked on the IBM 3082 and CDC Cyber mainframes, the Sun SPARC Unix workstation, the Tesla K20 GPU processor, and on most desktop-like computers.

University evaluator, member of scientific and organizing committees of international conferences, member of the editorial board of the journal "SN Operations Research Forum", Springer Nature, 2019.

Honours received include the J.T. Knight Price of University of Cambridge and awards for some of his research papers, the most recent ones being the best paper awards of the 2018 Conference on Bioinformatics (IMECS, Hong-Kong), and 2018 Conference on Computational Statistics and Data Engineering (WCE, London).

Recent:

- *Approximations and Optimization: Algorithms, Complexity and Applications* (editors I.C. Demetriou and P.M. Pardalos). Springer Optimization and its Applications, Springer International Publishing Switzerland, 2019, 237 pp., ISBN10 3030127664
(From: Springer Nature <springernature@newsletter.springernature.com>, 27 November 2020: To: demetri@econ.uoa.gr. Subject: **Well done – Your book is helping solve global challenges.** We are delighted to inform you that your book *Approximation and Optimization, Algorithms, Complexity and Applications* is among the top used publications on SpringerLink that concern one or more of the **United Nations Sustainable Development Goals**).
- Separation theorems for the extrema of best piecewise monotonic approximations to successive data, *Optimization Methods and Software*, pp. 439-459, Vol. 35, Issue 3, 2020, pp. 439-459. DOI: 10.1080/10556788.2019.1613653 (Reviewer: 'The topic studied in the paper is very important from the practical point of view'. Associate Editor: 'The results presented are interesting and concern a fundamental application in scientific computing.')
- A $O(n)$ algorithm for the discrete best L_4 monotonic approximation to univariate data, *Econometrics and Statistics* (ECOSTA), 2020, 16 pp. DOI information: 10.1016/j.ecosta.2020.04.002
- A binary search algorithm for univariate data approximation and estimation of extrema by piecewise monotonic constraints, 40 pp., *Journal of Global Optimization*, to appear.

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I.C. Demetriou's Publications

- [1] Generalized Preconditioned Strategies, M.Phil. Thesis 1980, Department of Computer Studies, University of Technology, Loughborough, U.K., 145 pp.
- [2] (With D.J. Evans) The preconditioning by direct factorization method for solving self-adjoint partial differential equations. In: Preconditioning. Analysis and Applications, Volume 1 (D.J. Evans, ed.), Gordon and Breach Sci. Pub., 1983, pp. 356–378.
- [3] Piecewise monotonic methods for data smoothing. Research essay 1983, Pembroke College, Department of Applied Mathematics and Theoretical Physics, Cambridge University, U.K., 70 pp, awarded with “J.T. Knight Prize of Mathematics 1983, Cambridge University”.
- [4] (With D.J. Evans) The preconditioned variational methods for solving large linear systems. *Mathematics and Computers in Simulation*, 27 (1985), pp. 365–372. Also: Adaptive preconditioned variational methods for solving self-adjoint partial differential equations. *International J. Computer Math.*, 2003, vol. 80 (5), pp. 615–627 (Taylor & Francis Group).
- [5] Data smoothing by piecewise monotonic divided differences. Ph.D. Dissertation 1985, Department of Applied Mathematics and Theoretical Physics (DAMTP), University of Cambridge, U.K., 281 pp.
- [6] (With D.J. Evans) The preconditioned conjugate gradient method for solving elliptic difference equations. In: *Numerical Approximation of Partial Differential Equations* (E.L. Ortiz, ed.), Elsevier Sci. Pub. North-Holland, 1987, pp. 205–217.
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- [9] (With M.J.D. Powell) The minimum sum of squares change to univariate data that gives convexity. *Institute of Mathematics and its Applications Journal of Numerical Analysis (IMA J. Numer. Anal.)*, 11 (1991), pp. 433–448.
- [10] A dual algorithm with multiple constraint additions for strictly convex quadratic programming. In: *HERMIS 92, Proceedings of the 1st Conference on Informatics and Mathematics* (E.A. Lipitakis, ed.), Athens, Greece, September 1992, Hellenic Mathematical Society Pub., pp. 55–62. Also in: *Advances on Computer Mathematics and its Applications* (E.A. Lipitakis, ed.), World Scientific 1993, pp. 22–29.
- [11] (With E.A. Lipitakis) On a stable Quadratic Programming Algorithm for 12 data approximation by non-negative divided differences. In: *HERMIS 92, Proceedings of the 1st Conference on Informatics and Mathematics* (E.A. Lipitakis, ed.), Athens, Greece, September 1992, Hellenic Mathematical Society Pub., pp. 45–53. Also in: *Advances on*

- Computer Mathematics and its Applications (E.A. Lipitakis, ed.), World Scientific, 1993, pp. 340–348.
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- [15] A characterization theorem of the best piecewise monotonic data approximation by a strictly convex metric . Proceedings of the 7th Hellenic Conference on Statistics, Nicosia, Cyprus, Greek Statistical Institute, June 1994, pp. 31–38.
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