

# Professor Efstratios Gallopoulos

## Biographical Narrative

Efstratios Gallopoulos has been Full Professor at the Department of Computer Engineering and Informatics (CEID) of the University of Patras since 1996. Since Dec. 2017, he is the Chair of the Department. He is also Director of the High Performance Information Systems Laboratory. Before that he has held the position of Director of the interdisciplinary graduate program “Mathematics of Computers and Decision Making” administered by the Mathematics Department of the University of Patras. He also served as Software Division director for several years (most recently the period 2013-16). Between Oct.-Dec. 2016 he was visiting professor at the CS&E Department of the University of Minnesota. Between Nov. 2010-June 2011 he held the position of invited professor and taught at the University of Rennes I (France), and at the University of Padova, Italy. He was also visiting faculty and consultant at the Computer Science Department of Purdue University and INRIA Rennes Bretagne-Atlantique. Prior appointments include research staff and faculty member at the University of Illinois at Urbana-Champaign (1986-96); assistant professor at the University of California Santa Barbara (1985-86); visiting researcher at NASA Goddard Space Flight Center (summer 1982 & 1983). He participated as Senior Computer Scientist in research and development of the Cedar vector multiprocessor at the University of Illinois CSRD (Center for Supercomputing Research and Development) (1987-94). Earlier on, he participated in the software development of the Goodyear Aerospace Massively Parallel Processor (MPP) (1980-85) receiving a NASA group achievement award (“For outstanding initiative and creativity in the development, demonstration, and practical application of the first Massively Parallel Processor”). In 2012, his students and he were awarded the ACM SIGWEB Hypertext Ted Nelson Newcomer Award. In 2016 Springer published the monograph “Parallelism in Matrix Computations” that he co-authored with Bernard Philippe and Ahmed Sameh. His research in Greece has been funded by various European and national programs and in the US by the US National Science Foundation, the US Department of Energy and AT&T. He has been participating as member in scientific committees of numerous international conferences, most recently the 2017 ACM Int’l. Conference on Supercomputing, the 2017 ACM Conference on Hypertext and Social Media, ParCo’17 and the 8th IEEE Int’l. Conference on Big Knowledge. He sat on the editorial boards of several journals (Parallel Computing, International Journal of High Speed Computing, Computing in Science and Engineering) and special issues (Applied Numerical Mathematics, J. Computational and Applied Mathematics), most recently serving on the board of the SIAM Journal of Scientific Computing and of the International Journal of Parallel Programming. He was co-organizer of the 1991 NSF Workshop on Problem Solving Environments, and served as program chair of the 2001 ACM International Conference on Supercomputing and on several occasions in the organizing committee of the NumAn conference. He was a co-organizer of the 2015 Gene Golub SIAM Summer School on Randomized Numerical Linear Algebra. Dr. Gallopoulos has served as panelist and expert reviewer for various agencies, most notably the European Research Council (ERC), the European Commission, and the Ministry of Education and Culture of the Republic of Cyprus. Between 2017-2020 he would be serving on the SIAM Gene Golub Summer School Committee. Dr. Gallopoulos received his Ph.D. at the Department of Computer Science of the University of Illinois at Urbana-Champaign under the supervision of Daniel Slotnick and his B.Sc. (First Class Honours) in Mathematics from the Imperial College of Science and Technology (1979). He is a member of the ACM and SIAM.

## Biographical Summary<sup>1</sup>

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**Teaching and Research:** [1996-today] University of Patras (Full Professor, CEID). [10/16-12/16] Visiting Professor, CS&E Department, University of Minnesota, Minneapolis. [11/10-6/11] Invited Professor, University of Rennes I (France), at the University of Padova, Italy. [2-6/99] Pennsylvania State University, Dept. Computer Science and Engineering; Visiting Professor (on sabbatical leave). [1986-96] University of Illinois at Urbana-Champaign (Senior Computer Scientist, Center for Supercomputing Research and Development; Assistant Professor (1993-96), Department of Computer Science). [1984-86] University of California, Santa Barbara (Assistant Professor, Dept. Electrical and Computer Engineering). [Summers 1982/83] NASA Goddard Space Flight Center (Research Associate). [1980-84] University of Illinois at Urbana-Champaign (Research Assistant, Dept. Computer Science). [1979-80] University of Illinois at Urbana-Champaign (Teaching Assistant, Dept. Mathematics).

**Administrative Positions:** [2017-today] Chair of the Department of Computer Engineering & Informatics. [2012-today] Director, High Performance Information Systems Laboratory. [2014-2016] Director of the Software Division. Director. [2009-2017] Director of the interdisciplinary graduate program “Mathematics of Computers and Decision Making”. [2010-2012] Member (vice-director) of the Board of Directors of the Patras Scientific Park.

**Research Interests:** Numerical methods for scientific computing with emphasis in linear algebra, high performance computing, parallel algorithms, linear algebra applications in data mining, networks and the Web, problem solving environments for computational science, computational science education.

**Studies:** [1979-85] University of Illinois at Urbana-Champaign: Ph.D. in Computer Science. [1976-79] University of London, Imperial College of Science and Technology: B. Sc. with First Class Honours in Mathematics.

**Honors & Awards:** Best Paper Award, 2017 IEEE International Conference on Big Knowledge. ACM SIGWEB Hypertext Ted Nelson Newcomer Award (with co-authors). Fellowship, Michel Metivier Foundation (2011). NASA Group Achievement Award “For outstanding initiative and creativity in the development, demonstration and practical application of the first Massively Parallel Processor” (1986).

**Editorial Boards:** [1989-today.] International Journal of High Speed Computing: Associate editor. [1993-1996] IEEE Computational Science and Engineering Magazine: Area editor for Numerical Algorithms and Book News and Reviews. [1996-2000] IEEE Computational Science and Engineering Magazine (renamed in 1999 Computing in Science and Engineering Magazine): Area Editor for Algorithms and Media News and Reviews. [2006-] International Journal of Parallel Programming. [2019-] SIAM J. Scientific Computing.

**Scientific Conference Administration and Session Organizer:** [2015] 2015 SIAM Gene Golub Summer School on “Randomized Numerical Linear Algebra”, Delphi. [2013] 6th Int’l. Conf. of the ERCIM WG in Statistics & Computing, London, Dec. 2013. Special Session co-Organizer and co-Chair. [2012] 6th Int’l. Conf. of the ERCIM WG in Statistics & Computing, Oviedo, Dec. 2012. Special Session co-Organizer and co-Chair. [2001] Program Committee Chairman, ACM International Conference on Supercomputing, Sorrento, Italy.

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<sup>1</sup>Focus in some sections is on recent activities. See also EG’s homepage for related information.

**Recent Scientific Program Committees:** [2018] 10th Int'l. Workshop on Parallel Matrix Algorithms and Applications (PMAA'18). ACM Int'l. Conf. Hypertext & Social Media. [2017] ACM Int'l. Conf. Supercomputing. ACM Int'l. Hypertext and Social Media. 8th IEEE Int'l. Conference on Big Knowledge. ParCo 2017. [2016] 9th Int'l. Workshop on Parallel Matrix Algorithms and Applications (PMAA'16). [2015] ParCo 2015. [2014] SemADoc Workshop: Semantic Analysis of Documents (together with ACM DocEng'14), Fort Collins, Colorado. 8th Parallel Matrix Algorithms and Applications Conference (PMAA 2014, Lugano). 6th Conf. Numerical Analysis. Recent Approaches: Theory, Methods and Applications (NUMAN, Chania). 28th IEEE International Parallel & Distributed Processing Symp. (IPDPS'14).

**Recent talks:** [2016] Plenary speaker at the 2016 GAMM Workshop on Applied Numerical Linear Algebra with emphasis on "Linear Algebra Challenges in Machine Learning", Hamburg-Harburg. Invited speaker at the Workshop "Parallel Numerical Computing and Its Applications", in honor of Prof. Marian Vajtersic, Mathematical Institute of the Department of Informatics of the Slovak Academy of Sciences, Smolenice Castle. Speaker at the Workshop on Fast Solvers, Nov. 2016, Purdue University.

**Memberships:** Member of the ACM and SIAM.

**Research Support:** Pythagoras Grant Investigator; Univ. Patras Karatheodori Grant Principal Investigator; Associate Director and member in various projects supported by the Greek Ministry of Education and the Greek Secretariat of Research and Development; Principal Investigator for the University of Patras for Project STABLE (Copernicus); Principal Investigator or co-Investigator in various research projects in the U.S.A. and Europe (7 sponsored by the U.S. National Science Foundation.)

**Other Academic Activities and Service:** [2016] European Research Council Panel Member. [2017-20] Member of the SIAM Gene Golub Summer School Committee. [2013-today] Reviewer for European FET project. [2014-today] Evaluator for FET-HPC calls of Horizon 2020. Earlier roles: Member and sometimes Director of Visiting Team of Experts in the evaluation process of programs of Tertiary Education in Computer Science and Engineering, Council of Educational Evaluation-Accreditation, Department of Education, Republic of Cyprus. Reviewer for the U.S. National Science Foundation and other national research foundations. Member of graduate and Ph.D. thesis committees in the U.S.A., Greece, France (Member of jury de thèse at the Universities of Grenoble and Lyon; rapporteur for Ph.D. at the Université de Rennes), Italy (corelatore, University of Padova). Invited speaker at several conferences and research colloquia. Faculty promotion evaluator for several departments in the USA.

### **Recent Publications<sup>2</sup>:**

- (1). A.N. Nikolakopoulos, V. Kalantzis, EG, and J. Garofalakis, "Factored proximity models for top-N recommendations", Proc. IEEE Int'l. Conf. Big Knowledge (ICBK 2017), Heifei, China.
- (2). Wu, A. Stathopoulos, J. Laeuchli, V. Kalantzis, EG, "Estimating the Trace of the Matrix Inverse by Interpolating from the Diagonal of an Approximate Inverse", In J. Computational Physics, 326:828-844, Dec. 2016.
- (3). E. Gallopoulos, Preface to the Greek edition of G.H. Golub and C. van Loan's Matrix Computations, 4th ed. (Πρόλογος στην ελληνική έκδοση, "Θεωρία και Υπολογισμοί Μητρώων", επιστ. επιμέλεια I. Εμίρης, εκδ. Πεδίο, Αθήνα 2015).
- (4). EG, P. Drineas, I. Ipsen and M. Mahoney, RandNLA, Pythons, and the CUR for Your Data Problems: Reporting from G2S3 2015 in Delphi, SIAM News, Jan. 2016.
- (5). EG, B. Philippe and A.H. Sameh, "Parallelism in Matrix Computations", Springer, 2015.

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<sup>2</sup>More can be found in the on-line list.

- (6). I. Venetis, A. Sobczyk, A. Kouris, A. Nakos, N. Nikoloutsakos and EG, "A general tridiagonal solver for coprocessors: Adapting g-Spike for the Intel Xeon Phi", PARCO 2015, Edinburgh, Sept. 2015.
- (7). I.E. Venetis, A. Kouris, A. Sobczyk, EG and A.H. Sameh, "A direct tridiagonal solver based on Givens rotations for GPU-based architectures", *Parallel Computing*, 49:101-116, Nov. 2015.
- (8). I. Venetis, N. Nikoloutsakos, EG and I. Ekaterinaris, "Towards the Implementation of Wind Turbine Simulations on Many-Core Systems", 53rd AIAA Aerospace Sciences Meeting, AIAA Science and Technology Forum, Florida, 2015.
- (9). I. Venetis, N. Nikoloutsakos, EG and I. Ekaterinaris, "Local stiffness matrix calculations for FSI: Applications on multiGPU systems", NUMAN 2014 abstract, Sept. 2014.
- (10). G. Kollias, EG and A. Grama, "Surfing the Network for Ranking by Multidamping", *IEEE Trans. KDE*, 26(9), Sept. 2014, doi:10.1109/TKDE.2013.15
- (11). V. Kalantzis, C. Bekas, A. Curioni and EG, "Accelerating data uncertainty quantification by solving linear systems with multiple right-hand sides", *Numer. Algorithms*, 62 (4):637-653, 2013.
- (12). E.M. Kontopoulou, M. Predari, and EG, "Onomatology and content analysis of ergodic literature", 24th ACM conference on Hypertext and social media "Narrative and Hypertext" Workshop (HT '12, Milwaukee), May 2013.
- (13). V. Kalofolias and EG, "Computing Symmetric Nonnegative Rank Factorizations", *Linear Algebra and its Applications*, 436 (2012), pp. 421-435.
- (14). E.M. Kontopoulou, M. Predari, T. Kostakis and EG, "Graph and matrix metrics to analyze ergodic literature for children", *Proc. 23rd ACM conference on Hypertext and social media (HT '12, Milwaukee)*, pp. 133-142, June 2012. Winner of the 2012 ACM SIGWeb Hypertext Ted Nelson Newcomer Award.
- (15). Edited Volume: M.W. Berry, K.A. Gallivan, EG, A. Grama, B. Philippe, Y. Saad and F. Saied eds., *High Performance Scientific Computing: Algorithms and Applications*, Springer ISBN 978-1-4471-2436-8 (Print) 978-1-4471-2437-5 (Online), Jan. 2012.
- (16). K. Gallivan, EG, A. Grama, B.Philippe, E. Polizzi, Y. Saad, F. Saied, and D.Sorensen, "Parallel Numerical Computing from Illiac IV to Exascale -The Contributions of Ahmed H. Sameh", in *High Performance Scientific Computing: Algorithms and Applications*, M. Berry et al. eds., Springer, Jan. 2012.
- (17). E. Gallopoulos, "Rapid Elliptic Solvers". In *Encyclopedia of Parallel Computing*, D. Padua ed., 1719-1728 Springer, 2011.