Foto Afrati

Curriculum Vitae

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Personal
Date of Birth:July 15,1953
Nationality:Greek

1. Professional Appointments

5/93 to present Professor of Computer Science, National Technical University of Athens, Greece.

Jan. 1996 Visiting Researcher at DIMACS.

year 93–94 Visiting Professor at the University of Paris for three months.

9/89 to 5/93 Associate Professor of Computer Science, NTU of Athens, Greece.

4/88 to 8/88 Visiting Researcher at IBM Thomas J. Watson Research Center in Yorktown Heights, New York.

1/88 to 3/88 Visiting Assistant Professor, Dept. of Computer Science, Stanford University, Stanford CA.

3/88 Visiting the Computer Science Dept., University of California at San Diego, La Jolla CA.

10/87 to 12/87 Visiting Assistant Professor, Dept. of Computer Science, Brown University, Providence, RI.

9/85 to 9/89 Assistant Professor of Computer Science, National Technical University of Athens, Greece.

1/86 to 3/86 Visiting Assistant Professor, Dept. of Computer Science, Stanford University, Stanford CA.

9/82 to 8/85 Lecturer of Computer Science, NTU of Athens, Greece.

9/80 to 8/82 Research Fellow, Electrical Engineering Dept., NTU of Athens, Greece.

2. Education

3/80 PhD in Electrical Engineering, Imperial College of the University of London. Thesis: Error Correcting Codes by Algorithms.

3/80 Diploma of Imperial College.

6/76 Diploma in Electrical and Mechanical Engineering, National Technical University of Athens, Greece.

3. Prizes and Honors

Prize in the annual mathematical competition sponsored by the Greek Mathematical Society, 1971.

Scholarship of the Greek National Scholarship Foundation, 1972, 1974.

4. Research Interests

Recent research interests are in the areas of databases and algorithms. More specifically, they include: database query languages, constraint databases, spatial databases, logic programming and databases, synthesis of logic programs, logical foundations of artificial intelligence, analysis of algorithms, parallel algorithms and complexity, scheduling, computational complexity. Other topics on which research has been conducted include: communication protocols in distributed systems error correcting codes and multimedia.

5. Research Projects

Principal investigator for three projects founded by the Greek Secretariat of Research and Technology in the following topics and dates: Theory of databases(1985-1987); Algorithms and Computational Complexity(1985-1987); Logic programing(1990-1992); Knoweledge Represantation (1994-1996). Object Oriented Databases (1995-1997)

Partner of the ECE founded Network of excellence in "Computational Logic"(1991-).

Partner in HCM network in the area of "Logic Program Synthesis and Transformation".

Partner in the Esprit funded working group "CONTESSA", in the area of constraint databases.

Partner in ESF funded project on "Embryonic Database"

Host for HCM grant holder (1995-1996) on Scheduling.

6. Publications

Papers in Refereed Journals

Afrati,F., "Bounded Arity Datalog($\neq$) Queries on Graphs" submitted as invited paper to special issue of *Journal of Computer and Systems Sciences* on ACM Conference 'Principles of Database Systems'.

Afrati,F., Cosmadakis,S.,Yannakakis,M., "Datalog vs. Polynomial Time", *Journal of Computer and Systems Sciences* (special issue on ACM Conference 'Principles of Database Systems'), October 1995.

Afrati,F., "A Polynomial Algorithm for Hamiltonian Grids". *RAIRO Theoretical Informatics and Applications*, Vol 28, no 6, 1994, pp 567–582.

Afrati,F., Stafylopatis,A., "Performance Considerations on a Random Graph Model for Parallel processing", *RAIRO Theoretical Informatics and Applications*, vol. 27, no. 4, 1993, pp 367–388

Paschos,P., Anagnostou,M., Afrati,F., "Deterministic Access Protocols for Packet radio Networks", *International Journal of Digital and Analog Communication Systems*, Vol. 6 1993, pp. 151–160.

Afrati,F., "The Parallel Complexity of Single Rule Logic Programs". *Discrtete Applied Mathematics* (special issue) 40 (1992) pp 107–126.

Afrati,F., Papadimitriou,C.H., "The Parallel Complexity of Simple Logic Programs", *J.ACM*, Vol. 90 No 4 September 1993, pp. 891–916.

Afrati,F., Papadimitriou,C.H., Papageorgiou,G., Roussou,A., Sagiv,Y., Ullman,J.D., "On the Convergence of Query Evaluation", *Journal of Computer and Systems Sciences*, Vol. 38 No 2, April 1989 (special issue), pp. 341-359.

Afrati,F., Papadimitriou,C.H., Papageorgiou,G. "The Synthesis of Communication Protocols", *Algorithmica* Vol 3, 1988 (special issue on distributed computing), pp. 451-472.

Afrati,F., Cosmadakis,S., Papadimitriou,C.H., Papageorgiou,G., Papakonstantinou "The Complexity of the Travelling Repairman Problem", *RAIRO Theoretical Informatics and Applications*, Vol.20, No.1, 1986, pp.79-87.

Afrati,F., Papadimitriou,C.H., Papageorgiou,G., "The Complexity of Cubical Graphs" *Information and Control* Vol.66, No.1-2, July-August 1985 pp. 53-60.

Books

Afrati,F., "Introduction to Information Theory" (in greek), publication of the NTU of Athens, 1985.

Afrati,F., Papageorgiou,G., “ Algorithms: Design and Analysis of Computational Complexity” (in greek), publication of the NTU of Athens, 1993.

Papers in Conference Proceedings

Afrati,F., Guessarian,I., de Rougemont,M. “Expressiveness of DAC Programs” , submitted

Afrati,F., Kavalieros,Th., Theodoratos,D., “On the Complexity of Updating Knowledge Bases”, *Proceedings* of Conference of Greek CS Society, Athens, Dec. 1995.

Afrati,F., Andronikos,Th., Kavalieros,Th., “Expressiveness of Constraint Query Languages” *Proceedings* of 1st workshop on Constraint Databases, Springer Verlag Lecture Notes in CS, 1995.

Afrati,F., Andronikos,Th., Kavalieros,Th., “On the Expressiveness of Query Languages with Linear Constraints: Considerations on Spatial Data” *Proceedings* of 2nd workshop on Constraint Databases, Springer Verlag Lecture Notes in CS, 1995.

Afrati,F., Cosmadakis,S., Grumbach,S., Kuper,G., "Linear vs. Polynomial Constraints in Database Query Languages", 2nd Workshop on Principles and Practice of Constraint Programming, 1994.

Afrati,F., "Bounded Arity Datalog($\neq$) Queries on Graphs", *Proceedings* of the 13^{th} ACM PODS, Symposium on the Principles of Database Systems, 1994.

Afrati,F., Cosmadakis,S.,Yannakakis,M., "Datalog vs. Polynomial Time", *Proceedings* of the 10^{th} ACM PODS, Symposium on the Principles of Database Systems, 1991, pp.13-25;(the final version appears above as a refereed journal entry).

Afrati,F., "Finding Strongly Connected Components in Series Parallel Graphs". *Proceedings* TENCON'91, New Dehli, India,1991.

Afrati,F., Coutras,C., "A Hypertext Model Supporting Query Mechanisms", *Proceedings* of the European Conference on Hypertext 1990, published in volume *Hypertext: Concepts, systems and applications* by Cambridge University Press.

Afrati,F., Stafylopatis,A., "Performance Considerations on a Random Graph Model for Parallel Processing". *Proceedings* of IMACS Conference, Paris 1988.

Afrati,F., Cosmadakis,S., "Expressiveness of Restricted Recursive Queries", *Proceedings* of the $21st$ ACM STOC, Symposium on Theory of Computing, May 1989, pp. 113-126

Afrati,F, Papadimitriou,C.H., Papageorgiou,G., "Scheduling Dags to Minimize Time and Communication", *Proceedings* of the Aegian Workshop on Computing (AWOC), June 1988.

Afrati,F., Papadimitriou,C.H., "The Parallel Complexity of Simple Chain Queries", *Proceedings* of the 6^{th} ACM PODS, Symposium on the Principles of Database Systems, March 1987; (the final version appears above as a refereed journal entry).

Afrati,F., Papadimitriou,C.H., Papageorgiou,G., Roussou,A., Sagiv,Y., Ullman,J.D., "Convergence of Sideways Query Evaluation", *Proceedings* of the 5^{th} ACM PODS, Symposium on the Principles of Database Systems,March 1986;(the final version appears above as a refereed journal entry).

Afrati,F., Papadimitriou,C.H., Papageorgiou,G. "The Synthesis of Communication Protocols", *Proceedings* of the 5^{th} ACM PODC. Symposium on the Principles of Distributed Computing, August 1986;(the final version appears above as a refereed journal entry).

Afrati,F., Anagnostou,M., Protonotarios,E.N., "Performance Evaluation of

Hybrid ARQ Protocols", *Proceedings* of IEEE Symposium on Information Theory, June 1985.

Afrati,F., Dendrinos,M., "Symmetry and Cyclicity Properties of some Low Complexity Codes", *Proceedings* of IEEE Symposium on Information Theory, June 1985.

Afrati,F., Papadimitriou,C.H., Papageorgiou,G., "The Complexity of Cubical Graphs", *Proceedings* of the 11^{th} ICALP, International Colloquium on Automata, Languages and Programming, *Lecture Notes in Computer Science* appears above as a refereed journal entry).

Anagnostou,M., Afrati,F., "On the Complexity and Accuracy of Algorithms used for the Performance Evaluation of ARQ Protocols", *Proceedings* of the IEEE International Conference MELECON, 1985.

Afrati,F., Papaspirou,V., "Optimal Extension of a Linear Code", *Proceedings* of the IEEE International Conference MELECON, 1985.

Afrati,F., Dendrinos.M., "Considerations on Low Complexity Codes Concerning Symmetry and Cyclicity",*Proceedings* DIGITECH, 1984.

Afrati,F., Ballas,D., "Analysis of Error Correcting Codes for the Binary Symmetric Channel", *Proceedings* MECO 1983.

Afrati,F., Anagnostou,M., Mikroudis,N., "A Hybrid ARQ Scheme using Convolutional Codes", *Proceedings* MECO 1983.

Afrati,F., Anagnostou,M., Mikroudis,N.,"A Hybrid Scheme for the Improvement of the ARQ Protocols", *Proceedings* of the IEEE International Conference MELECON, 1983.

Afrati,F., "A Random Search Algorithm for the Construction of Ternary Linear Block Codes", *Proceedings* of the IEEE International Conference MELECON, 1983.

Afrati,F., "A Graph-Theoretic Approach to the Binary Linear Block Code Construction", *Proceedings* of the IEEE International Symposium on Information Theory, 1982.

Afrati,F., " A Branch-and-Bound Method for the Construction of Binary Linear Block Codes", *Proceedings* of the IEEE International Conference MELECON, 1981.

Afrati,F., Constantinides,A.G., " The Use of Graph Theory in Binary Block Code Construction", *Proceedings* of the IEEE International Conference on Digital Signal Processing, 1978.

Technical Reports and submitted papers

Afrati,F., Anagnostou,M., "On the Complexity of Routing". technical report, NTUA, 1991.

7. Other Professional Activities

Member of the Technical Chamber of Greece, the Greek Mathematical Society, the Greek Computer Science Association, and the European Association for Theoretical Computer Science.

Organizing Committee member of the IEEE Conference MELECON'83, of ICALP'85 and the IEEE Communication Theory Workshop 1991.

Program Committee member of the ACM Conference PODS'92 and ICDT'92.

Member of the Committee for higher education of the Technical Chamber of Greece.

Reviewer in the Journals "Information and Computation", "The Computer Journal" , "Journal of Computer and Systems Sciences" ,"IEEE Transactions on Knowledge and Data Engineering" and the Journal of "Theoretical Computer Science".

She has been invited and give talks at IBM J. Watson Research Center (June 1988), Bell Laboratories (February 1992), Courant Institute of New York University (February 1992) University of Pennsylvania (February 1992), Stanford University (March 1988), Imperial College (December 1992), Universite Paris XI, VI, INRIA Rocquenqourt (1993).

Programm committee member and Orginizing committee chairman of the Second workshop of Compulog Network Knowledge Base Subgroup (Compulog is an Esprit network of excellence)

Program Committee Chair and Organizing Committee chair of ICDT'97.

8. Teaching Services to the University

Courses taught at NTUA:

Algorithms and Complexity (four times)

Theory of Computation (seven times)

Information Theory (nine times)

Stochastic Processes (three times)

Modulation and Demodulation (twice)

Programming Languages (once)

PhD students graduated: co-advisor for T. Apostolopoulos(1984), E. Sykas(1985), M. Anagnostou(1986), G. Papageorgiou(1986), V. Paschos(1987), D. Kavadias(1988), M. Dendrinos(1989), S. Paschos(1990). C. Coutras(1991).

PhD students: currently advising six PhD students and co-advising five PhD students at NTUA.

Service to NTUA:

Representative of the faculty at the Senate of NTUA for 1982-1984

Member of the Committee for Admissions(1982-1985)