

Curriculum Vitae

Sergio De Agostino

Born in Rome, Italy on January, 17, 1961.

July 1987: Advanced degree in Mathematics, Sapienza University of Rome.

October 1992: Ph. D. in Computer Science, Sapienza University of Rome .

1990-1994: Visiting researcher and teaching assistant at Brandeis University, Waltham, MA, USA, where he received a Master of Arts in Computer Science and realized his Ph. D. thesis.

May 1994: Hired as a Lecturer at the Computer Science Department of Sapienza University.

May 1997: Tenured at the Computer Science Department of Sapienza University.

August 2000 - May 2004: Tenure-track Assistant Professor at the Computer Science Department of Armstrong Atlantic State University (AASU), Savannah, Georgia, USA.

2003-2004: Coordinator of the Master Program in Computer Science at AASU.

April 2004: Tenured as an Associate Professor of Computer Science at AASU.

From **June 2004** he is a Senior Lecturer at the Computer Science Department of Sapienza University of Rome.

Teaching Activities

Brandeis University

1991-1994: He was Teaching Assistant for the graduate courses Computational Aspects of VLSI and Algorithms and for the undergraduate course Algorithms and Data Structures.

Sapienza University of Rome

1994-1995: He was a lecturer for the courses Computer Architecture 1 and 2.

1995-1997: He was a lecturer for the Operating Systems course.

1997-1999: He was a lecturer for the courses Combinatorics and Algorithms.

1997-2000: He taught a senior course on Algorithms.

2004-2012: He was a lecturer for the courses Computer Architecture and Algorithms.

2010-2016: He lectured on Theory of Computation and Complexity (from 2015 also ProgLab)..

Armstrong Atlantic State University

2000-2004: He taught the courses Algorithms and Data Structures, Objected Oriented Programming in C++, Theory of Computation, Analysis of Algorithms e Computer Concepts for Science Students.

Research Activities

The research area of Sergio De Agostino is Algorithms and Complexity. His main interests are parallel computing and data compression. He studied the parallel complexity of Lempel and Ziv compression methods [R7, R9, R12 ,R15, R17, R22, R24, C21, C22, C29, C30]. Other work concerns pattern matching in compressed text [C20], on-line versus off-line computational issues in data compression [R19, R21] and image compression [R5, R8, R11, R14, C9, C11, C12, C13, C14, C15, M1]. Currently, he is working on text compression on a distributed system [R1, R2, R3, R4, R7, C1, C2, C3, C4, C5, C6, C7, C8]. He has also studied several problems in combinatorial optimization and graph theory [R6, R10, R13, R16, R18, R20, R23, R25, R26, R27, C29].

Related activities:

Editor of the International Journal of Computer and Software Engineering.

Referee for the journals Theoretical Computer Science, Information and Computation, IEEE Transactions on Information Theory, IEEE Transactions on Image Processing, Parallel Processing Letters, International Journal of Foundations of Computer Science, Parallel Algorithms and Applications, The Computer Journal, Discrete Applied Mathematics, Software: Practice and Experience, Journal of Systems and Software, International Journal of Computers and Applications, Journal of Discrete Algorithms, Journal of Parallel and Distributed Computing, Theory of Computing Systems, Mathematics in Computer Science, Engineering Applications of Artificial Intelligence and several proceedings of the Lecture Notes in Computer Science.

Member of the Organizing Committee of the Third and Fourth Italian Conference on Algorithms and Complexity.

Member of the Program Committee of the 2003 Southeast ACM Conference.

He was Member of the Program Committees of the International Conference on Advanced Communications and Computation and of the International Conference on Systems and Networks Communications.

He was Member of the Advisory Committee of the International Conference on Internet and Web Applications and Services.

He was Keynote Speaker of the Conference WebTel 2013 with the speech “Standard Lossless Data Compression Applications and the MapReduce Web Computing Framework” (slides available at the website www.iaria.org/speeches.html) and Tutorial Speaker of the Conference NexTech 2014 with the speech “Computing Techniques for Parallel and Distributed Systems with an Application to Data Compression” (slides available at the website www.iaria.org/tutorials.html).

Publications

In international journals with referee:

- [R1] S. De Agostino, B. Carpentieri and R. Pizzolante, “Concurrent vs. Exclusive Reading in Parallel Decoding of LZ-Compressed Files”, *Algorithms*, **10** (2017), 1:21.
- [R2] S. De Agostino, “The Greedy Approach to Dictionary-Based Text Compression on a Distributed System”, *Journal of Discrete Algorithms*, **34** (2015), 54-61.
- [R3] S. De Agostino, “Real-Time and Distributed Applications for Dictionary-Based Data Compression”, *International Journal on Advances in Software*, **8** (2015), 75-84.
- [R4] S. De Agostino, “A Robust Approach to Large Size Files Compression using the MapReduce Web Computing Framework”, *International Journal on Advances in Internet Technology*, **7** (2014), 29-38.
- [R5] L. Cinque, S. De Agostino and L. Lombardi, “Binary Image Compression via Monochromatic Pattern Substitution: Sequential and Parallel Implementations”, *Mathematics in Computer Science*, **7** (2013), 155-166.
- [R6] S. De Agostino, “Weakly Split Graphs and Regular Cellulations of the 3-Sphere”, *Ars Combinatoria*, **108** (2013), 239-247.
- [R7] S. De Agostino, “Lempel-Ziv Data Compression on Parallel and Distributed Systems”, *Algorithms*, **4** (2011), 183-199.
- [R8] L. Cinque, S. De Agostino and L. Lombardi, “Scalability and Communication in Parallel Low-Complexity Lossless Compression”, *Mathematics in Computer Science*, **3** (2010), 391-406
- [R9] S. De Agostino, “Bounded Size Dictionary Compression: Relaxing the LRU Deletion Heuristic”, *International Journal of Foundations of Computer Science*, **17** (2006), 1273-1280.
- [R10] S. De Agostino, “A Conjecture on Biconnected Graphs and Regular Cellulations of the 3-Sphere”, *International Journal of Pure and Applied Mathematics*, **32** (2006), 197-200.
- [R11] L. Cinque, S. De Agostino, F. Liberati and B. Westgeest, “A Simple Lossless Compression Heuristic for Grey Scale Images”, *International Journal of Foundations of Computer Science*, **16** (2005), 1111-1119.
- [R12] S. De Agostino, “Almost Work-Optimal PRAM EREW Decoders of LZ Compressed Text”, *Parallel Processing Letters*, **14** (2004), 351-359.
- [R13] S. De Agostino, “A Conjecture on Biconnected Graphs and Regular Cell Complexes”, *Congressus Numerantium*, **166** (2004), 173-179.

[R14] L. Cinque, S. De Agostino and F. Liberati, "A Work-Optimal Parallel Implementation of Lossless Image Compression by Block Matching", *Nordic Journal of Computing*, **10** (2003), 13-21.

[R15] S. De Agostino and R. Silvestri, "Bounded Size Dictionary Compression: SC^k -Completeness and NC Algorithms", *Information and Computation*, **180** (2003), 101-112.

[R16] P. Crescenzi, S. De Agostino and R. Silvestri, "A Note on the Spatiality Degree of Graphs", *Ars Combinatoria*, **63** (2002), 185-191.

[R17] S. De Agostino, "Parallelism and Dictionary Based Data Compression", *Information Sciences*, **135** (2001), 43-56.

[R18] A.E. Andreev, A. Clementi, P. Crescenzi, E. Dahlhaus, S. De Agostino and J.D.P. Rolim, "The Parallel Complexity of Approximating the High Degree Subgraph Problem", *Theoretical Computer Science*, **205** (1998), 261-282.

[R19] S. De Agostino and R. Silvestri, "A Worst Case Analysis of the LZ2 Compression Algorithm", *Information and Computation*, **139** (1997), 258-268.

[R20] S. De Agostino, R. Petreschi and A. Sterbini, "An $O(n^3)$ Recognition Algorithm for Bithreshold Graphs", *Algorithmica*, **17** (1997), 416-425.

[R21] S. De Agostino and J. A. Storer, "On-Line versus Off-line Computation for Dynamic Text Compression", *Information Processing Letters*, **59** (1996), 169-174.

[R22] S. De Agostino, "A Parallel Decoding Algorithm for LZ2 Data Compression", *Parallel Computing*, **21** (1995), 1957-1961.

[R23] G. Bongiovanni, P. Crescenzi and S. De Agostino, "Max Sat and Min Set Cover Approximation Algorithms are P-complete", *Parallel Processing Letters*, **5** (1995), 293-298.

[R24] S. De Agostino, "P-complete Problems in Data Compression", *Theoretical Computer Science*, **127** (1994), 181-186

[R25] S. De Agostino and R. Petreschi, "On Matrogenic Graphs and PVchunk Operations", *International Journal of Foundations of Computer Science*, **1** (1992), 11-20.

[R26] S. De Agostino and R. Petreschi, "Parallel Recognition Algorithms for Graphs with Restricted Neighbourhoods", *International Journal of Foundations of Computer Science*, **1** (1990), 123-130.

[R27] D. P. Bovet, S. De Agostino and R. Petreschi, "Parallelism and the Feedback Vertex Set Problem", *Information Processing Letters*, **28** (1988), 81-85.

In international conferences with referee:

[C1] S. De Agostino, "Approximating Dictionary-Based Optimal Compression on a Distributed System", *Proc. Acm International Conference on Computing Frontiers* (2015), 44:1-2.

[C2] S. De Agostino, “The Uncompress Application on Distributed Communications Systems”, *Proc. International Conference on Networking and Services* (2015), 55-60.

[C3] S. De Agostino, “The Greedy Approach to Dictionary-Based Text Compression on a Distributed System”, *Proc. International Conference on Advanced Engineering Computing and Applications in Sciences* (2014), 1-6 (preliminary version of [R2]).

[C4] S. De Agostino, “Compressing Large Size Files on the Web in MapReduce”, *Proc. International Conference on Internet and Web Applications and Services* (2013), 135-140.

[C5] S. De Agostino, “Low-Complexity Lossless Compression on High Speed Networks”, *Proc. International Conference on Systems and Network Communications* (2012), 130-135.

[C6] S. De Agostino, “LZW Data Compression on Large Scale and Extreme Distributed Systems”, *Proc. Prague Stringology Conference* (2012), 18-27.

[C7] De Agostino, “Bounded Memory LZW Compression and Distributed Computing”, *Festschrift for Borivoj Melichar* (2012), Eds. J. Holub, B. Watson and J. Zdarek, 1-9.

[C8] S. De Agostino, “LZW versus Sliding Window Compression on a Distributed System: Robustness and Communication”, *Proc. INFOCOMP* (2011), 125-130.

[C9] L. Cinque, S. De Agostino and L. Lombardi, “Binary Image Compression via Monochromatic Pattern Substitution: A Sequential Speed-Up”, *Proc. Prague Stringology Conf.* (2011), 220-225.

[C10] S. De Agostino, “Lempel-Ziv Data Compression on Parallel and Distributed Systems”, *IEEE Proc. Int. Conf. On Data Compression, Communication and Processing* (2011), 193-202 (preliminary version of [R7]).

[C11] L. Cinque, S. De Agostino and L. Lombardi, “Binary Image Compression via Monochromatic Pattern Substitution: Effectiveness and Scalability”, *Proc. Prague Stringology Conference* (2010), 103-115.

[C12] S. De Agostino, “Compressing Bi-Level Images by Block Matching on a Tree Architecture”, *Proc. Prague Stringology Conference* (2009), 137-145.

[C13] L. Cinque e S. De Agostino, “Lossless Image Compression by Block Matching on Practical Massively Parallel Architectures”, *Proc. Prague Stringology Conference* (2008), 26-34.

[C14] L. Cinque, S. De Agostino and L. Lombardi, “Speeding up Lossless Image Compression: Experimental Results on a Parallel Machine”, *Proc. Prague Stringology Conference* (2008), 35-45.

[C15] Luigi Cinque and S. De Agostino, “A Parallel Decoder for Lossless Image Compression by Block Matching”, *Proc. IEEE Data Compression Conference* (2007), 183-192.

[C16] S. De Agostino, “Bounded Size Dictionary Compression: Relaxing the LRU Deletion Heuristic”, *Proc. Prague Stringology Conference*, 2005, 135-142 (preliminary version of [R9]).

- [C17] R. Hashemi, M. Bahar and S. De Agostino, “An Extended Self Organizing Map (ESOM) for Hierarchical Clustering”, *Proc. IEEE Conference on Systems, Man and Cybernetics*, 2005, 2856-2860.
- [C18] R. Hashemi, S. De Agostino, Bart Westgeest and J. Talburt, “Data Granulation and Formal Concept Analysis”, *IEEE Proc. NAFIPS*, 2004, 79-83.
- [C19] L. Cinque, S. De Agostino, F. Liberati and B. Westgeest, “A Simple Lossless Compression Heuristic for Grey Scale Images”, *Proc. Prague Stringology Conference (2004)* 48-55 (preliminary version of [R11]).
- [C20] S. De Agostino, “A Work-Optimal Parallel Implementation of Lossless Image Compression by Block Matching”, *Proc. Prague Stringology Conference (2002)* 1-8 (preliminary version of [R14]).
- [C21] S. De Agostino, “Speeding up Parallel Decoding of LZ Compressed Text on the PRAM EREW”, *Proc. SPIRE'2000*, 2-7.
- [C22] S. De Agostino, “Optimal Parallel Decoders for LZ2 Compression”, *Proc. IEEE Data Compression Conference (2000)*, 393-399.
- [C23] P. Barcaccia, A. Cresti and S. De Agostino, “Pattern Matching in Text Compressed with the ID Heuristic”, *Proc. IEEE Data Compression Conference (1998)*, 113-118.
- [C24] S. De Agostino and R. Silvestri, “Bounded Size Dictionary Compression: SC^k -Completeness and NC Algorithms”, *Proc. Symposium on Theoretical Aspects of Computer Science, Lecture Notes in Computer Science*, **1373** (1998) 522-532 (preliminary version of [R15]).
- [C25] S. De Agostino, “A Parallel Decoder for LZ2 Compression using the ID Update Heuristic”, *IEEE Proc. Sequences (1997)* 368-373.
- [C26] S. De Agostino and R. Silvestri, “A Worst Case Analysis of the LZ2 Compression Algorithm”, *Proc. South-American Workshop on String Processing (1996)* 75-84 (preliminary version of [R19]).
- [C27] A.E. Andreev, A. Clementi, P. Crescenzi, E. Dahlhaus, S. De Agostino and J.D.P. Rolim, “The Parallel Complexity of Approximating the High Degree Subgraph Problem”, *Proc. ISAAC, Lecture Notes in Computer Science*, vol. 1004 (1995) 132-141 (preliminary version of [R18]).
- [C28] S. De Agostino, R. Petreschi and Andrea Sterbini, “Parallel Maximum Matching for Graphs with Restricted Neighbourhoods”, *Proc. Fifth Italian Conference On Theoretical Computer Science (1995)* 94-101.
- [C29] D. Belinskaya, S. De Agostino and J.A. Storer, “Near Optimal Compression with Respect to a Static Dictionary on a Practical Massively Parallel Architecture”, *Proc. IEEE Data Compression Conference (1995)* 172-181.

[C30] S. De Agostino and J. A. Storer, “Parallel Algorithms for Optimal Compression using Dictionaries with the Prefix Property”, *Proc. IEEE Data Compression Conference* (1992) 52-61.

[C31] S. De Agostino and R. Petreschi, “On Matrogenic Graphs and PV-chunk Operations”, *Proc. Italian Conference on Algorithms and Complexity* (1990) 60-68 (preliminary version of [R25]).

In encyclopedias and monographies:

[M1] L. Cinque, S. De Agostino and L. Lombardi, “Lossless Image Compression by Block Matching on Practical Parallel Architectures”, *Texts in Algorithmics*, **11** (2008), King’s College Publications, 136-151.

[M2] S. De Agostino and R. Greenlaw, “Automata Theory”, *Encyclopedia of Information Systems*, **1** (2003), Academic Press, 47-63.