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# Gianni Franceschini

*Curriculum Vitæ*

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## Personal

CURRENT POSITION: Assistant Professor at the Department of Computer Science, University of Rome “La Sapienza”.

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## Education & Positions

2008: Assistant Professor at the Department of Computer Science, University of Rome “La Sapienza”, Italy.

2006: Research fellowship holder at the Department of Computer Science, University of Pisa, Italy.

2006: Researcher with the Institute for Informatics and Telematics, Italian National Research Council.

2005: Post-doctoral Fellow with the Max-Planck-Institut für Informatik in Saarbrücken, Germany.

2005: Post-doctoral Fellow with the School of Computer Science, University of Waterloo, Canada.

2005: Computer Science PhD, University of Pisa.

2004: Visiting student at the EECS Department of the University of California at Berkeley.

2002: Computer Science PhD candidate, University of Pisa, advisor prof. Roberto Grossi.

2001: Master Degree in Computer Science (Laurea in Scienze dell'Informazione) at the University of Pisa.

## Research Topics

- Implicit and space efficient data structures.
- Sorting and searching algorithms.
- Cache-oblivious algorithms and data structures.
- String algorithms and data structures.
- Graph Theory.

## Service

- Program Committee for the 16th Annual European Symposium on Algorithms (ESA), 2008.

## Papers

### Conference papers

- [26] Gianni Franceschini and Torben Hagerup. *Computing Maximum Suffixes with Fewer Comparisons*. In Proceedings of the 7th International Conference on Algorithms and Complexity (CIAC), 2010.
- [25] Gianni Franceschini, Roberto Grossi and S. Muthukrishnan. *Optimal Cache-Aware Suffix Selection*. In Proceedings of the 26th Symposium on Theoretical Aspects of Computer Science (STACS), 2009.
- [24] Gianni Franceschini, S. Muthukrishnan and Mihai Pătraşcu. *Radix Sorting With No Extra Space*. In Proceedings of the 15th European Symposium on Algorithms (ESA), pages 194–205, 2007.
- [23] Gianni Franceschini and S. Muthukrishnan. *In-Place Suffix Sorting*. In Proceedings of the 34th International Colloquium on Automata, Languages and Programming (ICALP), pages 533–545, 2007.
- [22] Gianni Franceschini and S. Muthukrishnan. *Optimal Suffix Selection*. In Proceedings of the 39th ACM Symposium on Theory of Computing (STOC), pages 328–337, 2007.

- [21] Gianni Franceschini. *Sorting by Merging or Merging by Sorting?* In Proceedings of the *10th Scandinavian Workshop on Algorithm Theory (SWAT)*, pages 77–89, 2006.
- [20] Gianni Franceschini and J. Ian Munro. *Implicit Dictionaries with  $O(1)$  Modifications per Update and Fast Search.* In Proceedings of the *17th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*, pages 404–413, 2006.
- [19] Arash Farzan, Paolo Ferragina, Gianni Franceschini and Ian Munro. *Cache-oblivious comparison-based algorithms on multisets.* In Proceedings of the *13th European Symposium on Algorithms (ESA)*, pages 305–316, 2005.
- [18] Gianni Franceschini and Roberto Grossi. *Optimal In-Place Sorting of Vectors and Records.* In Proceedings of the *32nd International Colloquium on Automata, Languages and Programming (ICALP)*, pages 90–102, 2005.
- [17] Gianni Franceschini. *Sorting Stably, In-Place, with  $O(n \log n)$  Comparisons and  $O(n)$  Moves.* In Proceedings of the *22nd Symposium on Theoretical Aspects of Computer Science (STACS)*, pages 629–640, 2005.
- [16] Gianni Franceschini and Roberto Grossi. *No Sorting? Better Searching!*. In Proceedings of the *45th Annual IEEE Symposium on Foundations of Computer Science (FOCS)*, pages 491–498, 2004.
- [15] Gianni Franceschini and Roberto Grossi. *A General Technique for Managing Strings in Comparison-Driven Data Structures.* In Proceedings of the *31st International Colloquium on Automata, Languages and Programming (ICALP)*, pages 606–617, 2004.
- [14] Gianni Franceschini. *Proximity Mergesort: Optimal In-Place Sorting in the Cache-Oblivious Model.* In Proceedings of the *15th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*, pages 291–299, 2004.
- [13] Gianni Franceschini and Viliam Geffert. *An In-Place Sorting with  $O(n \log n)$  Comparisons and  $O(n)$  Moves.* In Proceedings of the *44th Annual IEEE Symposium on Foundations of Computer Science (FOCS)*, pages 242–250, 2003.
- [12] Gianni Franceschini and Roberto Grossi. *Optimal Worst-Case Operations for Implicit Cache-Oblivious Search Trees.* In Proceedings of the

*8th International Workshop on Algorithms and Data Structures (WADS)*, pages 114–126, 2003.

- [11] Gianni Franceschini and Roberto Grossi. *Optimal Cache-Oblivious Implicit Dictionaries*. In *Proceedings of the 30th International Colloquium on Automata, Languages and Programming (ICALP)*, pages 316–331, 2003.
- [10] Gianni Franceschini and Roberto Grossi. *Implicit Dictionaries Supporting Searches and Amortized Updates in  $O(\log n \log \log n)$* . In *Proceedings of the 14th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*, pages 670–678, 2003.
- [9] Gianni Franceschini, Roberto Grossi, J. Ian Munro, and Linda Pagli. *Implicit B-trees: New results for the Dictionary Problem*. In *Proceedings of the 43rd Annual IEEE Symposium on Foundations of Computer Science (FOCS)*, pages 145–154, 2002.
- [8] Lino Flores Pacheco, Gianni Franceschini, Fabrizio Luccio, and Linda Pagli. *Decomposition of  $k$ -Dense Trees*. In *Proceedings of 3rd Symposium on Distributed Data and Structures*, 2001.

### Journal papers

- [7] Gianni Franceschini and Torben Hagerup. *Finding the maximum suffix with fewer comparisons*. *Journal of Discrete Algorithms*, Volume 9, Number 3, 2011.
- [6] Gianni Franceschini, Roberto Grossi. *No Sorting? Better Searching!*. *ACM Transactions on Algorithms*, Volume 4, Issue 1, 2008.
- [5] Gianni Franceschini, Roberto Grossi. *Optimal Implicit Dictionaries over Unbounded Universes*. *Theory of Computing Systems*, volume 39, number 2, pages 321–345, 2006.
- [4] Gianni Franceschini. *Sorting Stably, In-Place, with  $O(n \log n)$  Comparisons and  $O(n)$  Moves*. *Theory of Computing Systems*, special issue of the *22nd Symposium on Theoretical Aspects of Computer Science (STACS)*, number 40, pages 327–353, 2007.
- [3] Gianni Franceschini and Viliam Geffert. *An In-Place Sorting with  $O(n \log n)$  Comparisons and  $O(n)$  Moves*. *Journal of the ACM*, volume 52, number 4, pages 515–537, 2005.

- [2] Gianni Franceschini, Fabrizio Luccio and Linda Pagli. *Dense trees: a new look at degenerate graphs*. *Journal of Discrete Algorithms*, number 4, pages 455–474, 2006.
- [1] Gianni Franceschini, Roberto Grossi, J. Ian Munro, and Linda Pagli. *Implicit B-trees: A New Data Structure for the Dictionary Problem*. *Journal of Computer and System Sciences*, volume 68, issue 4, pages 788–807, 2004. Special issue of the *43th Annual IEEE Symposium on Foundations of Computer Science (FOCS)*.