

CURRICULUM VITAE ET STUDIORUM

PAOLO PENNA

PERSONAL DATA:

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| Name | Paolo Penna |
| Birth Date | January 13, 1972 |
| Nationality | Italian |
| Work | Università di Salerno, via S. Allende 2, I-84081 Baronissi (SA), Italy |
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EDUCATION:

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| 1991-1996 | Degree in Computer Science at the University of Rome “La Sapienza”, with grade 110/110 cum laude, advisor Pilu Crescenzi |
| 1996-2000 | PhD in Computer Science at the University of Rome “La Sapienza”, advisor Giorgio Gambosi |

WORKING EXPERIENCES AND VISITING POSITIONS:

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| Apr 1999-Jan 2001 | Visiting the research center of INRIA (Institut National de Recherche en Informatique et Automatique) in Sophia Antipolis, hosted by Afonso Ferreira |
| Mar 2001-Apr 2001 | Visiting ETH Zurich, working in Peter Widmayer’s research group |
| May 2001-Sept 2002 | PostDoc at ETH Zurich, research and teaching activities in Peter Widmayer’s research group |
| Feb 2002 | Visiting the School of Computer Science, Carleton University, Ottawa, hosted by Evangelos Kranakis |
| since Oct 2002 | PostDoc at the Università degli studi di Salerno, Dipartimento di Informatica ed Applicazioni “R.M. Capocelli”, research and teaching activities |

TEACHING ACTIVITIES:

- 2001 (Sept-Feb) Teaching the course Web Algorithms, an undergraduate course introducing to newly emerging computing paradigms for the Internet, held at ETH Zurich, introduced, organized and taught in collaboration with Roger Wattenhofer and Peter Widmayer
- 2002 (May-Sept) co-advising Mirjam Tolksdorf, Diploma Thesis (master thesis), title “Mechanism Design for Extended Task Scheduling” (other advisor Peter Widmayer)
- 2003 (Mar-Jun) Teaching the course Algoritmi per Agenti Egoisti (algorithms for selfish agents), an undergraduate class held at the Università di Salerno, in collaboration with Vincenzo Auletta and Giuseppe Persiano

INVITED TALKS:

Rolling Stock Rostering: Algorithms and Complexity. 2nd AMORE Research Seminar on Railway Optimization Problems, Patras, Greece, 30 Oct-3 Nov, 2001

RESEARCH PROJECTS:

- 2000 *Algoritmi efficienti per reti wireless*, granted within the project “Giovani Ricercatori”
- 2002 *Mobile phone antenna optimization: theory, algorithms, engineering and experiments*, ETHZ internal research project no. TH46/021
- 2002 *Efficient Algorithms for Selfish Agents*. ETHZ internal research project no. TH45/023

ORGANIZING AND SCIENTIFIC COMMITTEES:

- 2000 Organizing Committee of the *5th Italian Conference on Algorithms and Complexity (CIAC 2000)*
- 2003 Program Committee of the *2nd Int. Conference on AdHoc Networks and Wireless (AD-HOC-NOW 2003)*.
- 2003 Organizing and Scientific committee of the *1st Bertinoro Workshop on Algorithmic Game Theory (AGATE)*
- 2005 Program Committee of the *6th ACM International Symposium on Mobile Ad Hoc Networking and Computing (MOBIHOC 2005)*

LANGUAGES:

Italian (mother tongue), English (written/spoken, good knowledge), French (spoken good, written basic), German (basic knowledge).

RESEARCH INTERESTS:

- Algorithms and Complexity,
- Algorithmic Game Theory, Micro Economics and the Internet,
- Wireless Networks,
- Online Algorithms,
- Parallel Computing,
- Knowledge Representation,
- Graph Drawing.

PUBLICATIONS

CONFERENCES WITH REVIEW PROCESS

1. P. Penna and C. Ventre. *Energy-efficient Broadcasting in Ad-Hoc Networks: Combining MSTs with Shortest-path Trees*. In Proc. of the ACM Workshop on Performance Evaluation of Wireless Ad-Hoc, Sensor, and Ubiquitous Networks (**PE-WASUN-04**), ACM Press, pag. 61-68, 2004. Full version available as Technical Report of the European Project CRESCCO at www.ceid.upatras.gr/crescco, 2003.
2. P. Penna and C. Ventre. *More Powerful and Simpler Cost-Sharing Methods*. In Proc. of the 2nd Workshop on Approximation and Online Algorithms (**WAOA-04**), LNCS 3351, pag. 97-110, 2005 (in press). Full version available as Technical Report of the European Project CRESCCO at www.ceid.upatras.gr/crescco, 2004.
3. V. Auletta, R. De Prisco, P. Penna and P. Persiano. *The Power of Verification for One-Parameter Agents*. Proc. of the 14th International Colloquium on Automata, Languages and Programming (**ICALP-04**), LNCS 3142, pag. 171-182, 2004. Full version available as Technical Report of the European Project CRESCCO at www.ceid.upatras.gr/crescco, 2003.
4. G. Melideo, P. Penna, G. Proietti, R. Wattenhofer and P. Widmayer. *Truthful mechanisms for generalized utilitarian problems*. In Proc. of the 3rd International Conference on Theoretical Computer Science (**IFIP-TCS-04**), Kluwer Academic Publisher, pag. 165-180, 2004. Full version available as Technical Report of the European Project CRESCCO at www.ceid.upatras.gr/crescco, 2003.

5. V. Auletta, R. De Prisco, P. Penna and P. Persiano. *How to Route and Tax Selfish Unsplittable Traffic*. In Proc. of the 16th ACM Symposium on Parallelism in Algorithms and Architectures (**SPAA-04**), pag. 196-205, 2004. Full version available as Technical Report of the European Project CRESCCO at www.ceid.upatras.gr/crescco, 2003.
6. P. Penna and C. Ventre. *Sharing the cost of multicast transmissions in wireless networks*. In Proc. of the 11th Colloquium on Structural Information and Communication Complexity (**SIROCCO-04**), LNCS 3104, pag. 255-266, 2004. Full version available as Technical Report of the European Project CRESCCO at www.ceid.upatras.gr/crescco, 2003.
7. V. Auletta, R. De Prisco, P. Penna and P. Persiano. *Deterministic Truthful Approximation Mechanisms for Scheduling Related Machines*. Proc. of the 21st Annual Symposium on Theoretical Aspects of Computer Science (**STACS-04**), LNCS 2996, pag. 608-619, 2004
8. P. Crescenzi, G. Gambosi, G. Nicosia, P. Penna and W. Unger. *On-line load balancing made simple: Greedy strikes back*. In Proc. of the 13th International Colloquium on Automata, Languages and Programming (**ICALP-03**), LNCS 2719, pag. 1108-1122, 2003.
9. C. Ambuehl, A. Clementi, P. Penna, G. Rossi and R. Silvestri. *Energy Consumption in Radio Networks: Selfish Agents and Rewarding Mechanisms*. In Proc. of the 10th Colloquium on Structural Information and Communication Complexity (**SIROCCO-03**), Carleton Scientific Press, Proceeding in Informatics n.10, pag. 1-16, 2003.
10. M. Cielibak, S. Eidenbenz, A. Pagourtzis and P. Penna. *Noisy Data Make the Partial Digest NP-hard*. In Proc. of the 3rd Workshop on Algorithms in Bioinformatics (**WABI-03**), LNCS 2812, pp. 111-123, 2003. Also available as Technical Report of ETH, Institute of Theoretical Computer Science, 2002.
11. G. Bongiovanni and P. Penna. *XOR-based schemes for fast parallel IP lookups*. In Proc. of the 5th Italian Conference on Algorithms and Complexity (**CIAC-03**), LNCS 2653, pag. 238-250, 2003.
12. E. Kranakis, P. Penna, K. Schlude, D.S. Taylor and P. Widmayer. *Improving Customer Proximity to Railway Stations*. In Proc. of 5th Italian Conference on Algorithms and Complexity (**CIAC-03**), LNCS 2653, pag. 264-276, 2003. Full version available as Technical Report 371 of ETH, Institute of Theoretical Computer Science, 2002.
13. Andrea E.F. Clementi, Gurvan Huiban, Paolo Penna, Gianluca Rossi and Yann C. Verhoeven. *On the Approximation Ratio of the MST-based Heuristic for the Energy-Efficient Broadcast Problem in Static Ad-Hoc Radio Networks*. In Proc. of the 1st Workshop on Wireless, Mobile and Ad Hoc Networks (**WMAN-03**), 2003.

14. A.E.F. Clementi, G. Huiban, P. Penna, G. Rossi and Y.C. Verhoeven. *Some Recent Theoretical Advances and Open Questions on Energy Consumption in Ad-Hoc Wireless Networks*. In Proc. of 3rd Workshop on Approximation and Randomization Algorithms in Communication NEtworks (**ARACNE-02**), Carleton Scientific Press, Vol. 15, pag. 23-38, 2002.
15. L. Anderegg, P. Penna and P. Widmayer. *Online train disposition: to wait or not to wait?* In Proc. of ICALP 2002 Satellite Workshop on Algorithmic Methods and Models for Optimization of Railways (**ATMOS-02**), Electronic Notes in Theoretical Computer Science 66 No. 6, Elsevier, 2002.
16. A. Pagourtzis, P. Penna, K. Schlude, K. Steinhofel, D.S Taylor and P. Widmayer. *Server Placements for WinWin Strategies*. In Proc. of the 2nd IFIP International Conference on Theoretical Computer Science (**IFIP-TCS-02**), Kluwer Academic Publisher, pag. 280-291, 2002. Full version available as Technical Report 365, ETH Zurich, Institute of Theoretical Computer Science, October 2001.
17. T. Erlebach, M. Gantenbein, D. Huerlimann, G. Neyer, A. Pagourtzis, P. Penna, K. Schlude, K. Steinhofel, D.S. Taylor, P. Widmayer. *On the complexity of train assignment problems*. In Proc. of International Symposium on Algorithms and Computation (**ISAAC-01**), LNCS 2223, pag. 390-402, 2001.
18. A. Clementi, P. Crescenzi, A. Monti, P. Penna and R. Silvestri. *On Computing Ad-Hoc Selective Families*. In Proc. of the 5th International Workshop on Randomization and Approximation Techniques in Computer Science (**RANDOM-01**), LNCS 2129, pag. 211- 222, 2001.
19. A. Clementi, P. Crescenzi, P. Penna, G. Rossi and P. Vocca. *On the Complexity of Computing Minimum Energy Consumption Broadcast Subgraphs*. Proc. of the 18th Annual Symposium on Theoretical Aspects of Computer Science (**STACS-01**), LNCS 2010, pag. 121-132, 2001
20. A. Clementi, A. Ferreira, P. Penna, S. Perennes and R. Silvestri. *The Minimum Range Assignment Problem on Linear Radio Networks*. In Proc. of the 8th Annual European Symposium on Algorithms (**ESA-00**), LNCS 1879, pag. 143-154, 2000.
21. P. Crescenzi, G. Gambosi and P. Penna. *On-Line Algorithms for the Channel Assignment Problem in Cellular Networks*. In Proc. the ACM International Workshop on Discrete Algorithms and Methods for Mobile Computing (**DIALM-00**), pag. 1-7, 2000.
22. G. Bongiovanni, A. Clementi e P. Penna. *A Note on Parallel Read Operations on Large Public Databases*. In Proc of the International Workshop on Approximation and Randomized Algorithms in Communication Networks (**ARACNE-00**), Carleton Scientific Press, pag. 123- 133, 2000.

23. P. Penna. *Succinct Representations of Model Based Belief Revision*. In Proc. of the 17th Annual Symposium on Theoretical Aspects of Computer Science (**STACS-00**), LNCS 1770, pag. 205-216, 2000.
24. A. Clementi, P. Penna and R. Silvestri. *The Power Range Assignment Problem in Radio Networks on the Plane*. In Proc. of the 17th Annual Symposium on Theoretical Aspects of Computer Science (**STACS-00**), LNCS 1770, pag. 651-660, 2000.
25. A. Clementi, P. Penna and R. Silvestri. *Hardness Results for The Power Range Assignment Problem in Packet Radio Networks*. In Proc. of the 2nd. International Workshop on Approximation Algorithms for Combinatorial Optimization Problems (**APPROX-99**), LNCS 1671, pag. 197-208, 1999.
26. A. Andreev, A. Clementi, P. Penna and J. Rolim. *Memory Organization Schemes for Large Shared Data: A Randomized Solution for Distributed Memory Machines*. In Proc. of the 16th Annual Symposium on Theoretical Aspects of Computer Science (**STACS-99**), LNCS 1563, pag. 68-77, 1999.
27. P. Penna and P. Vocca. *Proximity Drawings: Three Dimensions are Better than Two*. In Proc. of Graph Drawing (**GD-98**), LNCS 1547, pag. 275-287.
28. P. Penna and P. Vocca. *Proximity Drawings of Binary Trees in Polynomial Area*. In Proc. of the Canadian Conference on Computational Geometry, (**CCCG-98**), Electronic proceedings available at <http://cgm.cs.mcgill.ca/~cccg98/proceedings/welcome.html>.
29. P. Crescenzi and P. Penna. *Minimum-Area h-v Drawings of Complete Binary Trees*. In Proc. of Graph Drawing (**GD-97**) , LNCS 1353, pag. 371-382, 1997.
30. P. Crescenzi and P. Penna. *Upward Drawings of Search Trees*. In Proc of the 22nd International Workshop on Graph-Theoretic Concepts in Computer Science (**WG-96**), LNCS 1197, pag. 114-125, 1997.

INTERNATIONAL JOURNALS

31. P. Penna. *On the Approximability of Two Tree Drawing Conventions*. Information Processing Letters, Vol. 82/5, pag. 237-242, 2002.
32. P. Crescenzi and P. Penna. *Strictly-upward drawings of ordered search trees*. Theoretical Computer Science, Vol. 203, No. 1, pag. 51-67, 1998.
33. P. Crescenzi, P. Penna and A. Piperno. *Linear Area Upward Drawings of AVL Trees*. Computational Geometry: Theory and Applications, Vol. 9, No. 1-2, pag. 25-42, 1998.
34. A. Clementi, A. Ferreira, P. Penna, S. Perennes and R. Silvestri. *The Minimum Range Assignment Problem on Linear Radio Networks*. Algorithmica, 35: 95-110, 2003.

35. P. Crescenzi, G. Gambosi and P. Penna. *On-Line Algorithms for the Channel Assignment Problem in Cellular Networks*. Discrete Applied Mathematics, 137(3):237-266.
36. A. Clementi, P. Penna and R. Silvestri. *On the Power Assignment Problem in Radio Networks*. ACM Mobile Networks and Applications, 9(2):125-140, 2004.
37. P. Penna and P. Vocca. *Proximity Drawings in Polynomial Area and Volume*. Computational Geometry: Theory and Applications, 20:91-116, 2004.
38. G. Bongiovanni and P. Penna. *XOR-based schemes for fast parallel IP lookups*. Theory of Computing Systems, special issue devoted to selected papers from CIAC03, to appear.
39. C. Ambuehl, A. Clementi, P. Penna, G. Rossi and R. Silvestri. *On the Approximability of the Range Assignment Problem in Radio Networks in Presence of Selfish Agents*. Theoretical Computer Science. Accepted for publication on the special issue "Game Theory Meets Theoretical Computer Science".

CHAPTERS IN BOOKS

40. A. Ferreira, J. Galtier and P. Penna. *Topological design, routing and hand-over in satellite networks*. Chapter in Handbook of Wireless Networks and Mobile Computing, John Wiley & Sons, pag. 473-491, 2002.

PHD THESIS

41. P. Penna. *Resource Assignment in Wireless Networks*. University of Rome La Sapienza, XII Ciclo, Dottorato in Informatica, September 2001. Electronic version available at <http://www.dia.unisa.it/~penna/no-blood-for-oil.html>

OTHERS

42. A. Andreev, A. Clementi, P. Penna and J. Rolim. *Parallel Read Operations Without Memory Contention*. Technical report of Electronic Colloquium in Computational Complexity, ECCC TR-0053, 2000. (Also submitted to international journal)
43. A. Clementi, P. Crescenzi, P. Penna, G. Rossi and P. Vocca. *A Worst-case Analysis of a MST-based Heuristic to Construct Energy-efficient Broadcast Subtrees in Wireless Networks*. Technical Report 010 of the Univ. of Rome Tor Vergata, 2001. Available at <http://www.mat.uniroma2.it/~penna/papers/stacs01-TR.ps.gz> (Also submitted to international journal)

- 44. J. Galtier and P. Penna. *Complexity Links Between Matrix Multiplication, Klees Measure and Call Access Control for Satellite Constellations*. INRIA TR-4166, France, April 2001. Available at <ftp://ftp-sop.inria.fr/pub/rapports/.INDEX.html>
- 45. V. Auletta, R. De Prisco, P. Penna and G. Persiano. *On Designing Truthful Mechanisms for Online Scheduling*. Technical Report of the European Project CRESCCO at www.ceid.upatras.gr/crescco, 2005.
- 46. P. Penna and C. Ventre. *Free-riders in Steiner tree cost-sharing games*. Technical Report of the European Project CRESCCO at www.ceid.upatras.gr/crescco, 2005.
- 47. P. Penna and C. Ventre. *When is cost-sharing possible?* Manuscript, 2005.

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