

# Curriculum

Susanna PELAGATTI

April 2015

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*Degree* : Ph.D in Computer Science  
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## 1 Education

- Ph.D. (Diploma di Dottore di Ricerca) in Computer Science, 1993. *Thesis title* : “A methodology for the development and the support of massively parallel programs”. *Supervisor* : M. Vanneschi (Univ. Pisa). *Referees* : G. Balbo (Univ. Torino), D. Skillicorn (Queens Univ., Kingston, Canada)
- Laurea in Scienze dell’Informazione, Università di Pisa, 1987. *(Ms) Thesis title* : Mapping of parallel programs on massively parallel architectures. *Supervisor* : M. Vanneschi (Univ. Pisa).

## 2 Activities

### 2.1 Permanent positions

- Associate Professor (Professore Associato). Dipartimento di Informatica, Università di Pisa. Permanent position September 2002 – now.
- Assistant Professor (Ricercatore). Dipartimento di Informatica, Università di Pisa. Permanent position February 1995 – August 2002.

### 2.2 Temporary positions

- January 2003 - *Maître de Conférences Invité* University of Paris VII
- January -October 2000 Visiting Professor at the Department of Computing, Imperial College, London.
- May 1999 - *Maître de Conférences Invité* University of Orleans
- March 1994 – February 1995: Post-Doc position at the Dipartimento di Informatica, Università di Pisa.
- March 1993 – February 1994: Fellowship at the Department of Computer Science, University of Edinburgh;

### 2.3 Other activities

- Participant, DOREMI EU-funded project, on Ambient Assisted Living, 2014-2016.

- Coordinator, Regione Toscana FAT-funded ABCD\_SW project, on Software for Autistic Children, 2011-2013.
- Participant, RUBICON EU-funded project, on Ambient Assisted Living, 2011-2013.
- Project Leader, *Skeletal Programming and Scheduling for Computational Grids*, Vigoni Program (Italy-Germany Exchange), University Muenster – University Pisa (Prof. S. Gorlatch) 2003–2004.
- *Recent conferences, workshops*
  - International Workshop on
  - Chair HLPP 2015, International Symposium on *High Level Programming and Applications*, Pisa July 2015
  - PC Member 4th Int. Workshop on *Constructive Methods for Parallel Programming (CMPP 2004)*, Stirling, Scotland, UK, 14 July 2004.
  - PC Member series Int. Workshops on *Practical Aspects of High-level Parallel Programming*: PAPP 2004, PAPP2007, PAPP 2008, PAPP 2009, PAPP 2010
  - PC Member series Int. Workshop on *High Level Programming and Applications* HLPP2005, HLPP2010, HLPP2011, HLPP2013, HLPP2014
- *Workshops* (invitation only)
  - *Theory and Practice of higher order Programming*, Dagstuhl Seminar, Feb. 16 – 21, 1997.
  - *High Level Parallel Programming: Applicability, Analysis and Performance*, Dagstuhl Seminar, Apr. 25–30, 1999.
- *Referee* for international congresses and journals.
- *Referee* for the British EPSRC.
- Member of the Advisory Board of Europar.
- *Fellowships*
  - (1992) fellowship Italian CNR to visit the EPCC (Edinburgh Parallel Computing Center) of the University of Edinburgh;
  - (1993) fellowship Human Capital Mobility to visit the Department of Computer Science (Univ. Edinburgh);
  - (2000) fellowship Italian CNR to visit the the Department of Computer Science (Imperial College, London);

### 3 Teaching Activity

Since 1995, Susanna Pelagatti taught the following courses for Laurea courses in Computer Science, Physics, Informatica Umanistica, the TFA Informatica and the Corso di Specializzazione per il Sostegno: *Operating Systems, Laboratory of C programming, Laboratory of System programming and POSIX, Sensors and Ad Hoc networks* and *Computer Science and Disability*.

She also taught in the Ph.D. Programme in Computer science in Pisa courses and seminars. She has been supervisor of the Ph.D thesis of Francesco Nidito (2005–2008: Thesis: Dealing with Non-Uniformity in Wireless Sensor Networks) Yan He (2003–2007: Thesis: Integrating LEO Satellite Constellations into Internet Backbone), Claudio Scordino (2004-2007: Thesis: Dynamic Voltage Scaling for Energy-Constrained Real-Time Systems. Co-supervisor: G. Lipari Scuola S. Anna)

## 4 Current scientific activity and past research topics

In the past, Susanna Pelagatti worked on mapping and scheduling for parallel programming, skeleton based systems, models of parallel computation, parallel programming environments and scheduling and routing in low-medium orbit satellite systems. Current research topics are:

- skeleton based systems for visual sensor networks
- scheduling and routing for sensor networks
- ambient assisted living
- software for disabled persons

## References

BOOKS:

- [1] S. Pelagatti. *Structured development of parallel programs* Taylor&Francis, London, 1997.  
Reviews: A. Stachurski. *IEEE Concurrency*, October 1999, page 88.

PH.D. THESIS:

- [2] S. Pelagatti. *A Methodology for the Development and the Support of Massively Parallel Programs*. PhD thesis, TD-11/93, Department of Computer Science, University of Pisa (Italy), 1993.

JOURNAL (*refereed*):

- [3] Luca Bastiani, M. Claudia Buzzi, Marina Buzzi, Olivia Curzo, Susanna Pelagatti, Caterina Senette. Web-based ABA Free Software Intervention in Children with Autism - Evidence from a Pilot Study. Submitted, 2015.
- [4] Stefano Chessa, Soledad Escolar, Susanna Pelagatti, Jess Carretero, Multi-Dimensional Recursive Routing with Guaranteed Delivery in Wireless Sensor Networks, *Computer Communications*, 57 (2015):85-99, DOI: 10.1016/j.comcom.2014.10.007
- [5] Stefano Chessa, Susanna Pelagatti and Nicoletta Triolo. Engineering energy efficient visual sensor network applications using skeletons. Accepted for publication on *Springer's International Journal of Parallel Programming (IJPP)* 2014.
- [6] Michele Albano, Stefano Chessa, Francesco Nidito and Susanna Pelagatti. Dealing with Non Uniformity in Data Centric Storage for Wireless Sensor Networks. *IEEE Transactions on Parallel and Distributed Systems*, 22 (8):1398-1406 (2011).
- [7] Roberto Di Cosmo, Susanna Pelagatti, Zheng Li and Pierre Wais. Skeletal Parallel Programming with OcamlP3L 2.0, *Parallel Processing Letters*, vol. 18, num. 1, pp 149-164, 2008.
- [8] Roberto Di Cosmo, Susanna Pelagatti and Zheng Li. A calculus for parallel computations over multidimensional dense arrays. *CLSS (Computer Languages, Systems and Structures)*, special issue on "Semantics and Cost Models for High-Level Parallel Programming vol. 33, num. 4, pp 82-110, 2006
- [9] Maurizio A. Bonuccelli, Francesca Martelli and Susanna Pelagatti. Optimal Packet Scheduling in Tree-Structured LEO Satellite Clusters. *MONET (MOBILE NETWORKS & APPLICATIONS)*, vol. 9, n. 4, 289-295, August 2004.
- [10] Roberto Di Cosmo and Susanna Pelagatti. A calculus for dense array distributions. *Parallel Processing Letters* Vol. 13, No. 3 (2003) pages 377-388.
- [11] S. Pelagatti and D.B. Skillicorn. Coordinating programs in the Network Of Tasks model. *Journal of System Integration*, num. 2, vol. 10, p. 107-126, 2001.
- [12] M. Aldinucci, S. Gorlatch, C. Lengauer and S. Pelagatti. Towards Parallel Programming by Transformation: The FAN skeleton framework. *Parallel Algorithms and Applications*, num. 2-3, vol. 16, p. 87-121, 2001.
- [13] B. Bacci, M. Danelutto, S. Pelagatti, and M. Vanneschi. SKIE: a heterogeneous environment for HPC applications. *Parallel Computing* vol. 25 num. 13-14, pag 1827-1852, Dec. 1999.

- [14] M. G. Norman, S. Pelagatti, and P. Thanish. On the complexity of scheduling with communication delay and contention. *Parallel Processing Letters*, 5(3):331–341, September 1995.
- [15] B. Bacci, M. Danelutto, S. Orlando, S. Pelagatti, and M. Vanneschi. P<sup>3</sup>L: A structured high level programming language and its structured support. *Concurrency: Practice and Experience*, 7(3):225–255, May 1995.
- [16] S. Antonelli and S. Pelagatti. A note on the NP-equivalence of the quadratic assignment problem. *Bollettino dell’Unione Matematica Italiana*, VII-A(3):333–340, October 1993.
- [17] M. Danelutto, R. Di Meglio, S. Orlando, S. Pelagatti, and M. Vanneschi. A methodology for the development and the support of massively parallel programs. *Future Generation Computer Systems*, 8:205–220, August 1992. Reprinted in *Programming Languages for Parallel Processing*, D.B. Skillicorn and D. Talia editors, IEEE Press, 1994.
- [18] S. Antonelli and S. Pelagatti. On the complexity of the mapping problem for massively parallel architectures. *International Journal of Foundations of Computer Science*, 3(3):379–387, September 1992.

CHAPTERS IN BOOKS:

- [19] Susanna Pelagatti. Task and Data Parallelism in P3L. Chapter in *Patterns and Skeletons for Parallel and Distributed Computing*, pp. 155-186, F.A Rabhi and S. Gorlatch (eds.), Springer 2002.

PROCEEDINGS OF WORKSHOPS CONFERENCES (*refereed*):

- [20] Silvia Artoni, Maria Claudia Buzzi, Marina Buzzi, Susanna Pelagatti, Caterina Senette. Technology-Enhanced Discriminative Programs for Children with Autism. REHAB 2014 2nd Patient Rehabilitation Research Techniques Workshop, Oldenburg, Germany, 20 May 2014
- [21] Stefano Chessa, Susanna Pelagatti, Nicoletta Triolo. Optimizing the MAC layer in real-time visual sensor networks applications using stencils’ IEEE ISCC 2014, Madeira, Portugal, June 2014
- [22] Jesus Carretero, Stefano Chessa, Soledad Escolar Diaz, Susanna Pelagatti, Routing with Virtual Coordinates in Mobile Sensor Networks, IEEE ISCC 2014, Madeira, Portugal, June 2014
- [23] Stefano Chessa, Susanna Pelagatti, Nicoletta Triolo. Engineering energy efficient visual sensor network applications using skeletons. *International Symposium on High-level Parallel Programming and Applications, Paris 1-2 July 2013*; to Appear in *International Journal of Parallel Programming*, (2013),
- [24] Maria Claudia Buzzi, Marina Buzzi, Barbara Leporini, Susanna Pelagatti Software per insegnamento precoce a bambini con sindrome autistica: ABCD SW, DIDAMATICA - Informatica per la Didattica, Pisa Maggio 2013
- [25] Davide Bacciu, Claudio Gallicchio, Alessandro Lenzi, Stefano Chessa, Alessio Micheli, Susanna Pelagatti. Distributed Neural Computation over WSN in Ambient Intelligence. 4th International Symposium on Ambient Intelligence, University of Salamanca (Spain), 22-24 May, 2013 (To appear)
- [26] Davide Bacciu, Stefano Chessa, Claudio Gallicchio, Alessandro Lenzi, Alessio Micheli and Susanna Pelagatti. A General Purpose Distributed Learning Model for Robotic Ecologies. International IFAC Symposium on Robotic Control (SYROCO 2012), session on Adaptive Robotic Ecologies, Dubrovnik, Croatia, 5-7 September 2012. In *Robot Control* 10(1), pp. 435-440.
- [27] Stefano Chessa, Soledad Escolar, Susanna Pelagatti, Paolo Baronti, Jesús Carretero. Guaranteed-delivery in arbitrary dimensional Wireless Sensor Networks by means of recursive virtual coordinates. *Proc. of ISCC 2012*: 399-404.
- [28] Michele Albano, Stefano Chessa, Francesco Nidito and Susanna Pelagatti. Grid-Enabled Remote Instrumentation in Data Centric Storage in Non-Uniform Sensor Networks, in *Proc. of 2nd International Workshop on Distributed Cooperative Laboratories (INGRID 2007 - Instrumenting the Grid)*, Santa Margherita Ligure, Italy, pp 3 – 19 ,2007
- [29] Maurizio A. Bonuccelli, Francesca Martelli and Susanna Pelagatti. An Optimal Packet

- Scheduling and Load Balancing Algorithm for LEO/MEO Satellite Networks. Atti di *Seventh International ACM Symposium on Modeling, Analysis and Simulation of Wireless and Mobile Systems (MsWIM 2004)*, October 2004, Venezia, Italia, pp. 47–51.
- [30] Roberto Di Cosmo and Susanna Pelagatti. A calculus for dense array distributions. Intentional Workshop on *High Level Parallel Programming and Applications* Paris, France, June 2003.
- [31] P.H.J. Kelly, S. Pelagatti and M. Rossiter. Instant-access cycle-stealing for parallel applications requiring interactive response. LNCS vol. 2400, pp. 863-872, Proc. of EuroPAR 2002 Padeborn, Germany 2002.
- [32] Maurizio A. Bonuccelli, Francesca Martelli, Susanna Pelagatti, Optimal packet scheduling in tree-structured LEO satellite clusters, IEEE IPDPS workshop on PDC issues in WNMC, vol. 1, 85–94, San Francisco, CA, USA 2001
- [33] Silvia Ciarpaglini, Laura Folchi, Salvatore Orlando, Susanna Pelagatti and Raffaele Perego, Integrating task and data parallelism with taskHPF, Int. Conf. on Parallel and Distributed Processing Techniques and Applications (PDPTA'2000), vol. 1, 2485–2491, Monte Carlo Resort, Las Vegas, Nevada, USA 2000
- [34] Maurizio A. Bonuccelli, Susanna Pelagatti, Optimal on demand packet scheduling in single-hop multichannel communication systems, IEEE IPDPS 2000 conference, vol. 1, 343–352, Cancun, Messico 2000
- [35] D. B. Skillicorn and S. Pelagatti. Building programs in the Network Of Tasks model. ACM Symposium on Applied Computing, vol. 1, 248–254, Como, Italy 2000.
- [36] S. Antonelli and S. Pelagatti. Using optimal partitioning strategies for skeleton allocation. Presented at *Parallel Computing 99*, Delft, August, 1999. In printing Imperial College Press, London.
- [37] B. Bacci, S. Gorlatch, C. Lengauer and S. Pelagatti. Skeletons and transformations in an integrated parallel programming environment. In *Proc. of Parallel Computing Technologies (PaCT-99)* V. Malyskin editor, LNCS 1662, p.13–27, September 1999. Springer, Berlin.
- [38] S. Gorlatch and S. Pelagatti. A transformational framework for skeletal programs: Overview and case study. In Jose Rolim et al. (Eds) *Proc. of Parallel and Distributed Processing. Workshops held in Conjunction with IPPS/SPDP'99*, LNCS 1586 p.123-137, April 1999. Springer, Berlin.
- [39] A. Zavarella and S. Pelagatti. Using BSP to optimize data distribution in skeleton programs. In Peter Sloot, Marian Bubak, Alfons Hoekstra, Bob Hertzberger (Eds.), *Proc. of HPCN'99, Amsterdam, NL*, volume 1593 of LNCS, pages 613-622, April 1999. Springer, Berlin.
- [40] D. Skillicorn, M. Danelutto, S. Pelagatti, and A. Zavarella. Optimizing data-parallel programs using the BSP cost model. In D. Pritchard and J.Reeve (Eds.), *Proc. of Euro-Par '98, Southampton, UK*, volume 1470 of LNCS, pages 698–703, September 1998. Springer, Berlin.
- [41] M. Danelutto, R. Di Cosmo, X. Leroy and S. Pelagatti. Parallel functional Programming with skeletons: the OcamlP3L experiment. *Proc. of the 1998 ACM Sigplan Workshop on ML, Baltimore, Maryland* pages 31–39, September 1998.
- [42] S. Pelagatti. Compiling and supporting skeletons on MPP. In J. Darlington, editor, *Proc. of the Third Working Conference on Massively Parallel Programming Models*, pages 140–150, Los Alamitos, CA, 1998. IEEE Computer Society Press.
- [43] M. Danelutto, F. Pasqualetti and S. Pelagatti Skeletons for Data Parallelism in p3l. In *Proc. of Euro-par '97, Passau, Germany*, LNCS 1300, pages 619–628 August 1997. Springer, Berlin.
- [44] S. Ciarpaglini, M. Danelutto, L. Folchi, C. Manconi, S. Pelagatti ANACLETO: a template-based p3l compiler. *Proceedings of the Seventh Parallel Computing Workshop (PCW '97)* pages P2-F-1–7, Australian National University, Canberra, September 1997.
- [45] B. Bacci, B. Cantalupo, M. Danelutto, S. Orlando, D. Pasetto, S. Pelagatti, and M. Vanneschi. An environment for structured parallel programming. In *Advances in High Performance Computing*, L. Grandinetti et al., editors, 219:234, NATO ASI Series Vol. 3-30, Kluwer Academic Publishers, Dordrecht, 1997.
- [46] A. Ceccolini, M. Danelutto, G. Orsini, and S. Pelagatti. A Tool for the Development of Structured Parallel Applications. In H. Liddel, A. Colbrook, B. Hertzberger, and P. Sloot,

- editors, *HPCN'96*, volume 1067 of *LNCS*, pages 485–492, April 1996. Springer, Berlin.
- [47] B. Bacci and S. Pelagatti. Optimal Implementation of MAP Computations onto a Transputer Grid. In H.R. Arabnia, editor, *Proceedings of Parallel and Distributed Processing Techniques and Applications*, 1996.
  - [48] M. Danelutto, S. Pelagatti, R. Ravazzolo, and A. Riaudo. Parallel OCR in P3L: a case study. In H. Liddel, A. Colbrook, B. Hertzberger, and P. Sloot, editors, *HPCN'96*, volume 1067 of *LNCS*, pages 1017–1019, April 1996. Springer, Berlin.
  - [49] B. Bacci, M. Danelutto, S. Orlando, S. Pelagatti, and M. Vanneschi. Summarising an experiment in parallel programming language design. In *Proc. of HPCN '95*, LNCS 919, May 1995. Springer, Berlin.
  - [50] B. Bacci, M. Danelutto, and S. Pelagatti. Resource optimization via structured parallel programming. In *Proc. of IFIP WG 10.3, Working Conference on Programming Environments for Massively Parallel Distributed Systems, Ascona (Switzerland)*, April 1994. Birkhäuser, Basel, Switzerland.
  - [51] P. Thanish, M.G. Norman, C. Boares, and S. Pelagatti. Locality and Scheduling Models for Parallel Computation. In *Proc. of IFIP WG 10.3, Working Conference on Programming Environments for Massively Parallel Distributed Systems, Ascona (Switzerland)*, April 1994. Birkhäuser, Basel, Switzerland.
  - [52] B. Bacci, M. Danelutto, S. Orlando, S. Pelagatti, and M. Vanneschi. Unbalanced Computations onto a Transputer Grid. In *Proc. of the 1994 Transputer Research and Application Conference*, September 1994. IOS Press, Amsterdam.
  - [53] P. Thanish, M. G. Norman, C. Boares, and S. Pelagatti. Exponential Processor Requirements for Optimal Schedules in Architectures with Locality. In *Proc. of the Workshop on General Purpose Parallel Computing, British Computer Society – Parallel Processing Specialist Group (BCS PPSG), London*, December 1993.
  - [54] M. Danelutto and S. Pelagatti. Parallel Implementation of FP using a Template-based Approach. In *Proc of the Fifth International Workshop on Implementation of Functional Languages, Nijmegen*, pages 7–21, September 1993.
  - [55] B. Bacci, M. Danelutto, S. Orlando, S. Pelagatti, and M. Vanneschi. Efficient compilation of structured parallel programs for distributed memory MIMD machines. In *Proc. of PARCOM 93, Grenoble, France*, G.R. Joubert, D. Trystram, F.J. Peters and D.J. Evans (eds), pages 565–568. Elsevier, Amsterdam, 1994.
  - [56] F. Baiardi, M. Danelutto, R. Di Meglio, M. Jazayeri, M. Mackey, S. Pelagatti, F. Petrini, T. Sullivan, and M. Vanneschi. Pisa Parallel Processing Project on general-purpose highly-parallel architectures. In *Proc. of the Fifteenth Annual International Computer Software and Applications Conference, Tokio, Japan*, pages 536–543, September 1991. IEEE Computer Society Press.
  - [57] M. Danelutto, R. Di Meglio, S. Pelagatti, and M. Vanneschi. High level language constructs for massively parallel computing. In *Computer and Information Sciences VI*, pages 777–778. Elsevier, Amsterdam, 1991.
  - [58] F. Baiardi, M. Danelutto, M. Jazayeri, S. Pelagatti, and M. Vanneschi. Architectural models and design methodologies for general-purpose highly-parallel computers. In *Proc. of IEEE CompEuro 91—Advanced Computer Technology, Reliable Systems and Applications, Bologna (Italy)*, pages 18–25, May 1991. IEEE Computer Society Press.
  - [59] S. Antonelli, F. Baiardi, S. Pelagatti, and M. Vanneschi. Modeling concurrent programs for static mapping. In *PARALLEL COMPUTING '91*, pages 357–366. Elsevier, Amsterdam, 1992.
  - [60] S. Antonelli, F. Baiardi, S. Pelagatti, and M. Vanneschi. A static approach to process mapping in massively parallel systems. In *Parallel Processing*, pages 319–332. North Holland, 1988.