

Breve curriculum del prof. Antonella Di Stefano

Antonella Di Stefano è professore ordinario del Gruppo Ingegneria Informatica (ING-INF 05) presso la Facoltà di Ingegneria di Catania, afferendo al DIIT (Dipartimento di Ingegneria Informatica e delle Telecomunicazioni).

Dal '92 insegna "Sistemi Operativi" e dal 2005 anche "Progettazione di Sistemi Distribuiti" presso la Facoltà di Ingegneria.

L'attività scientifica svolta negli ultimi anni dal prof. Antonella Di Stefano ha prevalentemente riguardato aree di ricerca inerente i sistemi distribuiti di grandi dimensioni ed è brevemente riconducibile alle seguenti tematiche:

- Ambienti per agenti. Sviluppo di modelli e piattaforme e studio di soluzioni innovative per reperimento e coordinazione di agenti mobili e non.
- Utilizzo del paradigma riflessivo in varie tematiche di software engineering, quali modelli per la progettazione Object Oriented, metriche per l'analisi e la valutazione dinamica di comunicazione e coordinazione di oggetti, "separation of concerns", adattatività ed evoluzione. Progettazione di middleware riflessivi a supporto della distribuzione e della coordinazione di applicazioni ad oggetti e/o agenti. Strutture adattative per la ridistribuzione dinamica degli oggetti in grado di seguire il modificarsi dell'offerta delle risorse nei sistema distribuiti
- Grid Computing. Le tematiche affrontate in quest'ambito hanno riguardato la progettazione di soluzioni per l'allocazione dei job e la gestione di risorse e web service per i middleware OGSA compliant (tipicamente Globus) e l'allocazione di risorse in ambiente P2P. Molti studi attualmente affrontati (nell'ambito di alcuni dei progetti più recenti, indicati di seguito) si rivolgono ai protocolli per il reperimento di risorse e per un'allocazione efficiente di risorse in ambiente P2P.

Partecipazioni a Comitati di Programma

program co-chair in

- **Workshop on Emerging Technologies for Next-Generation GRIDs (ETNGRID 2004)**, IEEE WETICE-2004, Modena, Italy, Jun. 14-16, 2004;
- **Workshop on Emerging Technologies for Next-Generation GRIDs (ETNGRID 2005)**, IEEE WETICE-2005, Linkoping, Sweden, Jun. 15-17, 2005;
- **Workshop on Emerging Technologies for Next-Generation GRIDs (ETNGRID 2006)**, IEEE WETICE-2006, Manchester, UK, Jun. 25-27, 2006;
- **20th ACM Symposium on Applied Computing (SAC 2005), Special Track on Programming for Separation of Concerns**. Santa Fe, New Mexico, USA, March 13-17, 2005.
- **7th AI*IA/TABOO Workshop "Dagli Oggetti agli Agenti", WOA 2006**, Catania, Italy, 26-27 Settembre 2006.

Elenco delle pubblicazioni da ottobre 2001.

Riviste e capitoli di libri

- R1. A. Di Stefano, C. Santoro. Coordinating Mobile Agents using Communicators. *AI*IA Notizie - Anno XIV, n. 4*, Dicembre 2001.
- R2. A. Di Stefano, C. Santoro. Locating Mobile Agents in a Wide Distributed Environment. *IEEE Transaction on Parallel and Distributed Systems*, Vol. 13, No. 8, August 2002.
- R3. A. Di Stefano, C. Santoro. Integrating Agent Communication Contexts in JADE. *EXP Telecom Italia Journal*, Vol.3, n.3, September 2003.
- R4. A. Di Stefano, G. Pappalardo, C. Santoro, E. Tramontana. Coordinating Multi-Agent Assistants with an Application by means of Computational Reflection. Capitolo del libro *Design of Intelligent Multi-Agent Systems * Human-Centredness, Architectures, Learning and Adaptation*, Springer, Vol. 162, 10.2004, ISBN 3-540-22913-2, Hardcover, October 2004, editor R. Khosla, N. Ichalkaranje, J. Lakhmi.
- R5. A. Di Stefano, G. Pappalardo, C. Santoro, E. Tramontana. The Transparent Implementation of Agent Communication Contexts. *Concurrency and Computation: Practice and Experience*. Wiley. , John Wiley & Sons, Vol. 18, No. 4, pp. 387-407, April 2006.
- R6. A. Di Stefano, G. Pappalardo, C. Santoro, E. Tramontana. A Framework for the Design and Automated Implementation of Communication Aspects in Multi-agent Systems. *Journal on Network, Communication and Applications*, Elsevier Science, doi:10.1016/j.jnca.2006.04.007.
- R7. A. Di Stefano, C. Santoro. A Peer-to-Peer Decentralized Strategy for Resource Management in Computational Grids. *Concurrency & Computation: Practice & Experience*, John Wiley & Sons, (DOI: 10.1002/cpe.1110).
- R8. A. Di Stefano, M. Fargetta, G. Pappalardo, E. Tramontana. Supporting Resource Reservation and Allocation for Unaware Applications in Grid Systems. Sottoposto per la pubblicazione su *Concurrency and Computation: Practice and Experience*. Wiley
- R9. A. Di Stefano, M. Fargetta, G. Pappalardo, E. Tramontana. Supporting Resource Reservation and Allocation for Unaware Applications in Grid Systems. In *Computational Grids. Concurrency & Computation: Practice & Experience*, John Wiley & Sons, Vol. 18, No. 8, pp. 851-863, July 2006. (DOI: 10.1002/cpe.980).

Atti di Congressi

- C1. A. Di Stefano, M. Giuffrida, C. Santoro. On-Line Load Balancing in a Multi-Agent Industrial Environment. In *Proc. of 6th IEEE International Conference on Intelligent Engineering Systems (INES 2002)*. Opatija (Croatia). May 26-28, 2002.
- C2. A. Di Stefano, C. Santoro. Modeling Multi-Agent Communication Contexts. In *Proc. of First ACM Intl. Joint Conference on Autonomous Agents and Multi-Agent Systems (AAMAS 2002)*. Bologna, July 15-19, 2002.
- C3. A. Di Stefano, G. Pappalardo, E. Tramontana. Introducing Distribution into Applications: a

Reflective Approach for Transparency and Dynamic Fine-Grained Object Allocation. In Proceedings *Seventh IEEE Symposium on Computers and Communications (ISCC'02)*. Taormina, Italy. July, 2002.

- C4. A. Di Stefano, G. Pappalardo, C. Santoro, E. Tramontana. Extending Applications using Reflective Assistant Agents. In Proceedings *26th IEEE Annual International Computer Software and Applications Conference (COMPSAC'02)*. Oxford (UK). August, 2002.
- C5. A. Di Stefano, G. Pappalardo, C. Santoro, E. Tramontana. A Multi-Agent Reflective Architecture for Web Search Assistance. In Proc. *Workshop su agenti per la rappresentazione della conoscenza ed il ragionamento, VIII Congresso AI*IA*, Siena, 10-13 Settembre, 2002.
- C6. A. Di Stefano, C. Santoro. A Framework for the Specification of Communication Rules in Multi-Agent Applications. In Proc. *Workshop su agenti per la rappresentazione della conoscenza ed il ragionamento, VIII Congresso AI*IA*, Siena, 10-13 Settembre, 2002.
- C7. A. Di Stefano, G. Pappalardo, C. Santoro, E. Tramontana. A Multi-Agent Reflective Architecture for User Assistance and its Application to E-Commerce. In Proceedings *International Workshop on Cooperative Information Agents (CIA'02)*. M. Klusch, S. Ossowski, and O. Shehory, editori, *Cooperative Information Agents VI. Lecture Notes in Artificial Intelligence, Vol. 2446*. Springer Verlag. Madrid, (Spain). September, 2002.
- C8. A. Di Stefano, C. Santoro. eXAT: an Experimental Tool for Programming Multi-Agent Systems in Erlang. In Proc. of *Workshop on Objects and Agents (WOA2003)*, Cagliari, 10-11 Sept, 2003.
- C9. A. Di Stefano, M. Fargetta, E. Tramontana. Computational Reflection for Embedded Java Systems. In R. Meersman and Z. Tari, ed. In Proceedings *OTM Workshop JTRES. Lecture Notes in Computer Science, Vol. 2889*. Springer Verlag. Catania, November, 2003.
- C10. A. Di Stefano, G. Pappalardo, C. Santoro, E. Tramontana. Enforcing Agent Communication Laws by means of a Reflective Framework. In Proceedings *ACM Symposium on Applied Computing (SAC'04)*. Nicosia (Cyprus). March 14-17, 2004.
- C11. A. Corsaro, A. Di Stefano, G. Pappalardo, C. Santoro, E. Tramontana. Emerging Technologies for Next-generation Grid. In Proceedings *IEEE WETICE ETNGRID*. Modena, Italy. June, 2004.
- C12. A. Di Stefano, M. Fargetta, G. Pappalardo, E. Tramontana. STREGA: A Support for Transparently Handling Resources for Grid Applications. In Proceedings *IEEE WETICE ETNGRID*. Modena, Italy. June, 2004.
- C13. A. Di Stefano, C. Santoro. Designing Collaborative Agents with eXAT. In Proc. Of *13th IEEE Intl. Workshop on Enabling Technologies: Infrastructures for Collaborative Enterprises (WETICE 2004)*. **Best paper award**. Modena, June 14-16, 2004.
- C14. A. Di Stefano, G. Pappalardo, E. Tramontana. An Infrastructure for Runtime Evolution of Software Systems. In *Proceedings Ninth IEEE Symposium on Computers and Communications (ISCC'04)*. Alexandria (Egypt). July, 2004.
- C15. A. Di Stefano, G. Pappalardo, C. Santoro, E. Tramontana. Engineering Constrained Agent Interactions with REFCON. In Proceedings *Artificial Intelligence Italian Association*

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- C16. A. Di Stefano, C. Santoro. eXAT: A Platform to Program Erlang Agents. In Proc. Of *NetObjectDays* 2004. Erfurt (Germany), Sept. 27-30, 2004
- C17. A. Di Stefano, M. Fargetta, G. Pappalardo, E. Tramontana. Separating Soft Real-Time from Functionality Concerns in Complex Object-Oriented Applications. In R. Meersman, Z. Tari, A. Corsaro editori, *Proceedings OTM Workshop JTRES, Lecture Notes in Computer Science, Vol. 3292, Springer Verlag*. Cyprus. October, 2004
- C18. A. Di Stefano, G. Pappalardo, C. Santoro, E. Tramontana. SHARK, a Multi-Agent System to Support Document Sharing and Promote Collaboration. In *Proceedings IEEE Hot P2P Workshop*. Volendam (Holland). October, 2004.
- C19. A. Di Stefano, C. Santoro. On the use of Erlang as a Promising Language to Develop Agent Systems. In Proc. *WOA* 2004. Bologna, 29 Novembre-1 Dicembre, 2004
- C20. A. Di Stefano, M. Fargetta, G. Pappalardo, E. Tramontana. Handling Run-time Updates in Distributed Applications. In *Proceedings ACM Symposium on Applied Computing (SAC'05)*. March 13-17, 2005, Santa Fe, New Mexico, USA.
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- C22. A. Di Stefano, C. Santoro. Supporting Agent Development in Erlang through the eXAT Platform. Whitestein series book on Agent Platforms and Applications, M. Calisti, M. Klush, R. Unland eds., 2005.
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- C25. A. Di Stefano, C. Santoro. Building Semantic Agents in eXAT. In Proc. of Workshop on Objects and Agents (WOA2005), Camerino, Italy, Nov. 14-16, 2005.
- C26. A. Di Stefano, C. Santoro. A Marketplace-based Economical Model for Resource Provisioning Agreement in a P2P Grid. In Proc. of HPDC Workshop on the Use of P2P, GRID and Agents for the Development of Content Distribution Networks (UPGRADE 2005), Paris, France, Jun. 20, 2006.
- C27. G. Di Giore, A. Di Stefano, G. Morana, C. Santoro. JIT Compiler Optimizations for Stack-based Processors in Embedded Platforms. In Proc. of 4th Workshop on Java Technologies for Real-time and Embedded Systems (JTRES 2006). ACM Publisher. Paris, France, Oct. 11-13, 2006.

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- 2) V. Carchiolo, A. Di Stefano, A. Faro, G. Pappalardo, "ECCS and LIPS: Two Languages for OSI Systems Specification and Verification", *ACM Transactions on Programming Languages and Systems*, Vol.11, N. 2, April 1989, pp. 284-329.
- 3) V. Carchiolo, A. Di Stefano, A. Faro, G. Pappalardo, "Case study in protocol verification", *Computer System Science and Engineering*, Vol. 5, N. 3, July 1990, pp.178-186.
- 4) A. Di Stefano, O. Mirabella, F. Presente, "Implementing A DSP-based Petri-Net simulation tool", *IEEE MICRO*, April 1991, pp.20-23,56-64.
- 5) A. Di Stefano, O. Mirabella, "A fast sequence control device based on enhanced Petri Nets", *Microprocessors & Microsystems*, Vol.15, N. 4, May 1991.
- 6) A. Di Stefano, F. Melita, O. Mirabella, "Internal vs. External Parallelism: an application of a Digital Signal Processor to Matrix Inversion", *Foundations of Computing and Decision Sciences*, Vol.16, N.3-4, 1991, pp.203-221.
- 7) A. Di Stefano, O. Mirabella, "Evaluating the Field Bus Data Link Layer by a Petri Net-Based Simulation", *IEEE Transactions on Industrial Electronics*, Vol.38, N.4, August 1991, pp. 288-297.
- 8) A. Di Stefano, O. Mirabella, C. Zappala', "Featuring FDDI in a Process Control Environment", *Computers in Industry*, Elsevier Sc. Publ., 21, 1993, pp.35-49.
- 9) S. Cavalieri, A. Di Stefano, O. Mirabella, "Optimization of Acyclic Bandwidth Allocation Exploiting the Priority Mechanism in the FieldBus Data Link Layer", *IEEE Transactions on Industrial Electronics*, Vol. 40, N.3, June 1993, pp.297-306.
- 10) S. Cavalieri, A. Di Stefano, O. Mirabella, "Neural Strategies to Handle Routing in Computer Networks", *International Journal of Neural Systems*, World Scientific Publishing Company, Vol.4, N.3, September 1993, pp.269-289.
- 11) A. Di Stefano, O. Mirabella, "A Fast Petri-Net-Based Sequence Controller Implemented on a DSP", *International Journal on Advanced Manufacturing Technology*, Springer-Verlag, 9, 1994, pp.375-381.
- 12) S. Cavalieri, A. Di Stefano, O. Mirabella, "Distributed Routing in Packet-Switching Networks by CounterPropagation Network", *Journal of Applied Intelligence*, Kluwer Academic Publisher, 4, 1994, pp.67-82.
- 13) S. Cavalieri, A. Di Stefano, O. Mirabella, "Optimal Path Determination in a Graph by Hopfield Neural Network", *Neural Networks*, Elsevier Science Ltd, Vol.7, N.2, 1994, pp.397-404.
- 14) S. Cavalieri, A. Di Stefano, O. Mirabella, "Artificial Neural Networks on a Reconfigurable, Fault-Tolerant, Multi-Processor System", *Microprocessor and Microsystems*, Butterworth, Vol.18, N.6, July/August 1994, pp.331-342.

- 15) S. Cavalieri, A. Di Stefano, A. La Corte, O. Mirabella, "A DSP-based Parallel Architecture for Neural Network Simulation", *International Journal of Microcomputer Applications*, Vol. 18, 1995, pp.1-21.
- 16) S. Cavalieri, A. Di Stefano, O. Mirabella, "Pre-Run-Time Scheduling to Reduce Schedule Length in the FieldBus Environment ", *IEEE Transactions on Software Engineering*, Vol.21, N.11, November 1995, pp.865-880.
- 17) S. Cavalieri, A. Di Stefano, O. Mirabella, "Mapping Automotive Process Control on IEC/ISA Fieldbus Functionalities", *Computers in Industry*, Vol. 28, N.3, June 1996, pp.233-250.
- 18) S. Cavalieri, A. Di Stefano, O. Mirabella, "Impact of FieldBus on Communication in Robotic Systems", *IEEE Transactions on Robotics and Automation*, Vol.13, N.1, February 1997, pp.30-48.
- 19) A. Di Stefano, L. Lo Bello, O. Mirabella, "Assessment of job allocation on heterogeneous computer network", *Advances in Engineering Software incorporating Computing Systems in Engineering*, Elsevier, Vol.28, N.1, Jan.1997, pp. 63-71.
- 20) A. Di Stefano, L. Lo Bello, O. Mirabella, "Some issues concerning Fieldbus Design by means of an Expert System", *Computers in Industry*, Elsevier, 32, March 1997, pp. 305-318.
- 21) A. Di Stefano, L. Lo Bello, E. Tramontana, "Factors Affecting the Design of Load Balancing Algorithms in Distributed Systems", *The Journal of Systems and Software*, Elsevier, Vol. 48, N. 2, September 1999, pp.105-117.
- 22) A. Di Stefano, L. Lo Bello, "Exploiting the Knowledge of Task Structure for Distributed Allocation", *Journal of Parallel and Distributed Computing*, Academic Press, 59, 1999, pp.54-67.
- 23) A. Di Stefano, S. Santoro, "NetChaser: Agent Support for Personal Mobility", *IEEE Internet Computing*, Vol. 4, N. 2, Marzo-Aprile 2000, pp. 74-79.
- 24) A. Di Stefano, C. Santoro. A Java Kernel for Embedded Systems in Distributed Process Control. *IEEE Concurrency*, special issue on Operating Systems Research & Development. Vol. 8, No. 4, Oct-Dec. 2000.

Partecipazione a un libro.

- 1) A. Di Stefano, O. Mirabella, "Numerical applications of DSPs in Robotic Computations", *Microprocessors in Robotic and Manufacturing Systems*, Ed. S. Tzafestas, Kluwer Academic Publishers, 1991.

Conferenze.

- 1) A. Di Stefano, O. Mirabella, "Throughput and Reliability improvement in a Multiring LAN", 16th Annual Pittsburgh Modelling and Simulation Conference, Aprile 1985, Pittsburgh.
- 2) A. Di Stefano, M. Malgeri, L. Vita, "A Session Layer Implementation to a Local Network", 6th International Conference on Control Systems and Computer Science, Maggio 1985, Bucarest.

- 3) A. Di Stefano, M. Malgeri, O. Mirabella, "A specification of a PROWAY protocol with an Algebraic language", IFIP 5th International Workshop on Protocol Specification, Verification and Testing, Giugno 1985, Tolosa.
- 4) V. Carchiolo, A. Di Stefano, A. Faro, G. Pappalardo, "Protocol Against Service Verification", 5th Italian-Soviet Seminar on Computer Networks, Giugno 1985, Ischia.
- 5) A. Di Stefano, G. Scollo, A. Vissers, "LOTOS in practice", IFIP Congress '86, Settembre 1986, Dublino.
- 6) S. Costanzo, A. Di Stefano, A. Faro, "Towards an Expert System for Logic Circuit Synthesis", COMPCON Spring '87, Febbraio 1987, San Francisco.
- 7) A. Di Stefano, O. Mirabella, TENCON 87, "Toward an automatic system for earthquake investigation", Agosto 1987, Seul.
- 8) A. Di Stefano, O. Mirabella, "On the implementation of a fast Petri Nets simulator", 19th Annual Pittsburgh Modelling and Simulation Conference, Maggio 1988, Pittsburgh.
- 9) S. Conigliaro, A. Di Stefano, O. Mirabella, "An expert system for medical diagnosis", IEEE Symposium on the Engineering of Computer Based Medical Systems, Giugno 1988, Minneapolis.
- 10) A. Di Stefano, A. Faro, O. Mirabella, "DSP networks for computer integrated manufacturing", International Conference on Systems Science and Engineering, Luglio 1988, Pechino.
- 11) A. Di Stefano, F. Gibilisco, O. Mirabella, "Modelling of distributed problem solving using logic modified Petri Nets", Workshop on Specification and Verification of Concurrent Systems, Luglio 1988, Stirling. Pubblicato nel volume Specification and Verification of Concurrent Systems, Ed. C. Rattray, Springer Verlag, Giugno 1990.
- 12) A. Di Stefano, M. Malgeri. "A framework to integrate System Specification Tools", Workshop on the Future Trends of Distributed Computing Systems in the 1990s, Settembre 1988, Hong Kong.
- 13) A. Di Stefano, O. Mirabella, "On PN based tools for parallel processes simulation", IMACS International Symposium on System Modelling and Simulation, Settembre 1988, Cetraro.
- 14) A. Di Stefano, E. Lo Cascio, O. Mirabella, "An experimental evaluation network for MC68824 TBC", International Conference on Communication Systems, Ottobre 1988, Singapore.
- 15) A. Di Stefano, A. Faro, O. Mirabella, "On modelling distributed real-time knowledge-based systems", International Symposium and Exposition on Robots, Novembre 1988, Sydney.
- 16) A. Di Stefano, O. Mirabella, "A Message Passing Parallel Architecture for Intensive Signal Processing", CA-DSP '89, Ottobre 1989, Hong Kong.
- 17) A. Di Stefano, O. Mirabella, F. Presente, "A fast Petri-Net based sequence controller implemented on a DSP", IFAC Low Cost Automation, Novembre 1989, Milano.

- 18) A. Di Stefano, O. Mirabella, "A Distributed Problem Solver for seismic monitoring", TENCON'89, Novembre 89, Bombay.
- 19) A. Di Stefano, O. Mirabella, "A comparison between Data Link functionalities in Field Bus networks", IFIP INDOLAN'90, Gennaio 1990, Madras.
- 20) A. Di Stefano, A. Faro, O. Mirabella, "On cooperation between rule-based robot processes for just- in-time manufacturing", Manufacturing International'90, Marzo 1990, Atlanta.
- 21) A. Di Stefano, O. Mirabella, "An Expert System for macroseismic investigations", 21th Annual Pittsburgh Modelling and Simulation Conference, Maggio 1990, Pittsburgh.
- 22) A. Di Stefano, O. Mirabella, G. Sberna, "Applying a DSP to seismic monitoring", IGARSS/URSI, Maggio 1990, Maryland.
- 23) A. Di Stefano, A. Leonardi, O. Mirabella, "Knowledge based protocols for intelligent motion control", IECON'90, IEEE Int. Workshop on Intelligent Motion Control, Agosto 1990, Istanbul.
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- 27) A. Di Stefano, O. Mirabella, "A multi-DSP monitoring station for realtime detection and evaluation of earthquakes", IGARSS/URSI, Maggio 1990, Maryland.
- 28) S. Cavalieri, A. Di Stefano, O. Mirabella, "Assessment of the Communication in a Multi-DSP Architecture for a Multilayer Perceptron Simulation", Italian Workshop on Parallel Architectures and Neural Networks, 8-10 May 1991, Vietri sul Mare, Salerno, Italy, pp.313-316.
- 29) S. Cavalieri, A. Di Stefano, O. Mirabella, G.Reitano, "On the Design of a Multiprocessor Architecture for Neural Network Simulation", International Symposium on Circuits and Systems, ISCAS'91, 11-14 June, 1991, Singapore, pp.2538-2541.
- 30) S. Cavalieri, A. Di Stefano, O. Mirabella, "Reliability in Process Control Networks: a Comparison between IEEE802.4 and the Fieldbus", International Symposium on Parallel and Distributed Computing in Engineering Systems, P.D.COM'91, 23-28 June, 1991, Corfu' Hilton International, Corfu', Greece, pp.441-446.
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- 39) S. Cavalieri, A. Di Stefano, O. Mirabella, "Hopfield Neural Network for Routing", International Workshop on Artificial Neural Networks, IWANN93, 9-11 June 1993, Sitges, Barcellona, Spain.
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- 41) S. Cavalieri, A. Di Stefano, O. Mirabella, "Meeting Time Requirements in Robotics by a Fieldbus Communication System", 19th Annual International Conference on Industrial Electronics, Control and Instrumentation, IECON'93, November 15-19 1993, Hawaii, USA.
- 42) S. Cavalieri, A. Di Stefano, O. Mirabella, "Fault Tolerance in a Multi-DSP Architecture for NN Simulation", International Conference on Artificial Neural Networks, ICANN'94, 26-29 Maggio, 1994, Sorrento, Italy, pp.1400-1403.
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