Alessandro Margara

Contacts

Name	Alessandro Margara
Date of Birth	April 1^{st}, 1983
Place of Birth	Novara, Italy
Nationality	Italian
Current Position	Assistant Professor Politecnico di Milano
Address	Room 305, Via Golgi 42, 20133 Milano
Telephone	+39 02 2399 3483
E-Mail	alessandro.margara@polimi.it
Homepage	`http://home.deib.polimi.it/margara`

Current and Past Positions

June 2016 – Present
Assistant Professor, *Politecnico di Milano*, Milano.
Research in the field of parallel and distributed systems with focus on event stream processing and reactive systems

February 2014 – May 2016
Post-doctoral Research Assistant, *Università della Svizzera Italiana (USI)*, Lugano.
Research on software testing. Research on software engineering methodologies for multiscale simulations on large-scale high performance computing infrastructures

September 2012 – February 2014
Post-doctoral Research Assistant, *Vrije Universiteit Amsterdam*, Amsterdam.
Research on infrastructures for e-science applications

March 2012 – August 2012
Post-doctoral Research Assistant, *Politecnico di Milano*, Milano.
Research on dependable, distributed and pervasive systems

September 2011 – December 2011
Visiting Research Scholar, *Purdue University*, West Lafayette, IN.
Research in the field of distributed publish/subscribe systems. Host: Prof. Patrick Eugster

January 2009 – December 2011
PhD Student, *Politecnico di Milano*, Milano.
Advisor: Prof. Gianpaolo Cugola

July 2008 – December 2008
Research Assistant, *Politecnico di Milano*, Milano.
Research in the field of large scale distributed systems with focus on event based middleware

Qualifications

April 2017
Italian National Scientific Qualification to the function of Associate Professor in Information Processing Systems, *Italian academic discipline code: 09/H1 - Sistemi di Elaborazione delle Informazioni, from the Italian Ministry of Education, Universities and Research (MIUR). Obtained on April 4th, 2017 according to article 16, subsection 1, of the Italian law number 240/10.*

Education

2009–2011
PhD Computer Science, *Politecnico di Milano*, Milano, Advisor: Prof. Gianpaolo Cugola, ***Cum Laude***.

2006–2008 **M.S. (Laurea Specialistica), Computer Engineering (Ingegneria Informatica)**, *Politecnico di Milano*, Milano, *110/110*.

2002–2006 **B.S. (Laurea Triennale), Computer Engineering (Ingegneria Informatica)**, *Politecnico di Milano*, Milano, *107/110*.

1998–2002 **Scientific High School Degree (Diploma di Maturità Scientifica)**, *Liceo Scientifico A. Antonelli*, Novara, *100/100*.

Summer Schools

October 2009 **Advances in Wireless Sensor Networks**, *Politecnico di Milano*, Milano, Italy.

September 2009 **Complex Networks and Statistics**, *National Research Council (CNR)*, Pisa, Italy.

Awards & Recognitions

2017 Awarded with 3000 Amazon Web Services cloud credits in the AWS Cloud Credits for Research program.

2017 Awarded with a NVidia GPU to support research under the NVidia GPU Grant program

2014 Best paper award at the 8th ACM International Conference on Distributed Event-Based Systems (DEBS '14) [21]

2012 PhD was awarded Cum Laude [46]

2011 Best paper nominee at the 5th ACM International Conference on Distributed Event-Based System (DEBS '11) [13]

2009 Recipient of Ph.D. scholarship granted by Italian Ministry of Education, University and Research at Politecnico di Milano (Italy)

Languages

Italian **Native**

English **Proficient user**

Memberships

ACM Member

Research Profile

My research interests span different areas, and in particular parallel and distributed systems and software engineering. My main research activity focuses on the definition of techniques and tools to ease the design, development and analysis of complex parallel and distributed systems, with a special emphasis on stream processing and reactive systems.

Starting from my PhD studies in Politecnico di Milano, I investigated event-based middleware as a suitable communication substrate to build complex distributed applications. I first worked on extensions of publish-subscribe systems [11], and then moved towards the definition of Complex Event Processing (CEP) systems, which are the topic of my PhD thesis [46].

CEP systems can be programmed to detect situations of interest from the observation of relevant patterns of event occurrences. They introduce two main research challenges: the definition of suitable programming languages and paradigms to express the patterns of interest and the design and implementation of efficient algorithms and tools to analyze event occurrences. My PhD research focuses on both aspects [4, 12, 2, 13, 6, 3, 5, 39, 25].

My first contribution in the area of CEP systems is a study of existing solutions and systems designed to process streaming information [4, 35]. Next, I worked on the definition of a new language to model the complex relationships among events [12], on the implementation of efficient algorithms for event processing [2], and on the design of communication protocols for distributed processing [30, 5].

Motivated by the performance requirements of many modern event-based and reactive applications, I worked on algorithms and tools that exploit the parallelism of multi-core CPUs and modern GPUs to speedup the analysis and dispatching of events [13, 15, 6, 3].

After my PhD studies, I joined the High Performance Distributed Computing group at the Vrije Universiteit in Amsterdam, where I applied my research on event and data streaming in the context of Semantic Web technologies and rule-based reasoning [7, 24, 18, 19, 28].

In 2014, I joined the Software Engineering group at the University of Lugano (USI), where I extended my expertise in the area of software testing and analysis [26, 10].

Since 2016, I am an assistant professor at Politecnico di Milano.

During my career, I developed a network of collaborations. I have been a visiting research scholar in the group of prof. Patrick Eugster at Purdue University (US). I participated in a number of international research projects on various topics, including self-adaptive systems [16], service-oriented systems [20], monitoring systems [31, 40, 17, 41], Wireless Sensor Networks [1], programming language paradigms [32, 22, 36] and software engineering for high performance computing [33].

Teaching Activity

September 2016 – February 2017 **Lecturer**, *Politecnico di Milano*, Milano, Italy.
Lecturer for the "Informatica A" class

September 2016 – December 2016 **Teaching Assistant**, *Politecnico di Milano*, Milano, Italy.
Teaching Assistant for the "Distributed Systems" class

May 2016 **Invited Lecturer**, *Technische Universität Darmstadt*, Darmstadt, Germany.
External Lecturer for the "Concepts and Technologies for Distributed Systems and Big Data Processing" class

September 2015 – February 2016 **Lecturer**, *Università della Svizzera Italiana (USI)*, Lugano, Switzerland.
Lecturer for the "Computer Networking" class

March 2015 **Proposer and Lecturer**, *Politecnico di Milano*, Milano, Italy.
Proposer and Lecturer for the "Stream and Complex Event Processing" class for PhD Students, with Prof. G. Cugola and E. Della Valle

October 2013 – November 2013 **Lecturer**, *Vrije Universiteit Amsterdam*, Amsterdam, The Netherlands.
Lecturer for the "Systems Programming" class

April 2013 **Proposer and Lecturer**, *Politecnico di Milano*, Milano, Italy.
Proposer and Lecturer for the "Stream and Complex Event Processing" class for PhD Students, with Prof. G. Cugola and E. Della Valle

April 2013 – May 2013 **Lecturer**, *Vrije Universiteit Amsterdam*, Amsterdam, The Netherlands.
Lecturer for the "Academic English" class

September 2009 – February 2010 **Teaching Assistant**, *Politecnico di Milano*, Milano, Italy.
Teaching Assistant for the "Distributed Systems" class; Prof. G. Cugola

September 2010 – February 2011 **Teaching Assistant**, *Politecnico di Milano*, Milano, Italy.
Teaching Assistant for the "Distributed Systems" class; Prof. G. Cugola

March 2009 – July 2009 **Teaching Assistant**, *Politecnico di Milano*, Milano, Italy.
Teaching Assistant for the "Software Engineering" class; Prof. L. Baresi

September 2008 – February 2009 **Teaching Assistant**, *Politecnico di Milano*, Milano, Italy.
Teaching Assistant for the "Distributed Systems" class; Prof. G. Cugola

Supervised PhD Students

June 2016 – Present Irma Metra, PhD Student, "Design, Verification and Implementation of a High Performance Stream Reasoning System". Advisor: prof. G. Cugola, Politecnico di Milano, Milano, Italy.

June 2016 – Present Lorenzo Affetti, PhD Student, "A Distributed Real-time Computation Infrastructure". Advisor: prof. G. Cugola, Politecnico di Milano, Milano, Italy.

September 2014 – Present Francesco Bianchi, PhD Student, "Automated Testing of Distributed Systems". Advisor: prof. M. Pezzè, University of Lugano (USI), Lugano, Switzerland.

February 2014 – Present Mattia Vivanti, PhD Student, "Dynamic and Static Analysis Combined for Code Coverage". Advisor: prof. M. Pezzè, University of Lugano (USI), Lugano, Switzerland.

September 2013 – March 2014 Emanuele Panigati, PhD Student, Project on "Inference on Dynamic Data". VU University, Amsterdam, The Netherlands. Advisor: prof. L. Tanca, Politecnico di Milano, Milano, Italy

Supervised Master Students

2017 Dario Collavini, MSc Thesis, "Integrating SPARQL into TESLA to achieve Stream Reasoning". Advisor: prof. G. Cugola, Politecnico di Milano, Milano, Italy.

2016 Angelo Di Pilla, MSc Thesis, "Combining streaming events with static data in the Complex Event Processing tool T-Rex". Advisor: prof. G. Cugola, Politecnico di Milano, Milano, Italy.

2016 Claudio Sanna, MSc Thesis, "High performance stream reasoning: A highly parallel implementation of C-SPARQL in CUDA". Advisor: prof. G. Cugola, Politecnico di Milano, Milano, Italy.

2014 Simone Bernasconi, MSc Thesis "Mobile Distributed Reactive Programming with Consistency Guarantees". Advisor: prof. C. Ghezzi, University of Lugano (USI), Lugano, Switzerland.

2011 – 2012 Andrea Marzorati, MSc Thesis "Storex : un Middleware di Complex Event Processing con Capacità di Storage". Advisor: prof. G. Cugola, Politecnico di Milano, Milano, Italy

2011 – 2012 Maria Cristina Di Santo, MSc Thesis "Complex Event Processing Under Uncertainty: Model, Implementation and Evaluatione". Advisor: prof. G. Cugola, Politecnico di Milano, Milano, Italy

2010 – 2011 Alberto Negrello, MSc Thesis "Implementazione e Analisi di Protocolli per il Rilevamento Distribuito di Eventi Complessi". Advisor: prof. G. Cugola, Politecnico di Milano, Milano, Italy

2010 – 2011 Francesco Feltrinelli, MSc Thesis "Human-Oriented Event Processing: Human Interactions in Complex Event Processing". Advisor: prof. G. Cugola, Politecnico di Milano, Milano, Italy

2010 – 2011 Daniele Bruno Bottelli, MSc Thesis "Algoritmi di Forwarding per Hardware Parallelo". Advisor: prof. G. Cugola, Politecnico di Milano, Milano, Italy

2009 – 2010 Luca Mantovani, MSc Thesis "CCBR-MS: un Protocollo per Interrogazioni Distribuite in WSN". Advisor: prof. G. Cugola, Politecnico di Milano, Milano, Italy

Service

Organization Committee Membership

2017 Proceedings chair for the 11th ACM International Conference on Distributed Event-Based Systems (DEBS 2017)

2017 Posters and demos co-chair for the 18th ACM/IFIP/USENIX Conference on Middleware (Middleware 2017)

2016 Co-chair of the Workshop on *Real-Time & Stream Analytics in Big Data.* within the IEEE International Conference on Big Data (IEEE BigData 2016), 5–8 December 2016, Washington D.C., USA

2016 Co-organizer of the symposium *Software engineering meets scientific computing: generality, reusability and performance for scientific software platforms. Part 1: Engineering methodologies and development processes.* within the ACM Platform for Advanced Scientific Computing Conference (PASC 2016), 8–10 June 2016, EPFL Lausanne, Switzerland

2016 Co-organizer of the symposium *Software engineering meets scientific computing: generality, reusability and performance for scientific software platforms. Part 2: Performance and scalability requirements.* within the ACM Platform for Advanced Scientific Computing Conference (PASC 2016), 8–10 June 2016, EPFL Lausanne, Switzerland

Editorial Board Membership

2017 Member of the Editorial Advisory Board of IGI Global Smart Marketing with the Internet of Things

2017 Member of the Guest Editorial Board for the Semantic Web Journal, Special Issue on Stream Reasoning

Program Committee Membership

2017 PC Member of the 11th International Conference on Advanced Engineering Computing and Applications in Sciences (ADVCOMP 2017)

2017 PC Member of the 12th International Conference on Software Engineering Advances (ICSEA 2017)

2017 PC Member for the 3rd International Conference on Advances and Trends in Software Engineering (SOFTENG 2017)

2017 PC Member for the 2nd IEEE Internet of Things Design and Implementation (IoTDI 2017)

2016 PC Member for the 3rd International Workshop on Stream Reasoning (SR 2016)

2015 PC Member for the 9th International Web Rule Symposium (RuleML 2015) Doctoral Consortium

2015 PC Member for the 4th International Workshop on Ordering and Reasoning (OrdRing 2015)

2015 PC Member for the 8th International Conference on Distributed Event-Based Systems (DEBS 2015) Demo & Poster Track

2015 PC Member for the 9th International Web Rule Symposium (RuleML 2015)

2014 PC Member for the 3rd International Workshop on Ordering and Reasoning (OrdRing 2014)

2013 PC Member for the 7th ACM International Conference on Distributed Event-Based Systems (DEBS 2013)

2013 PC Member for the 13th IEEE/ACM International Symposium on Cluster, Cloud, and Grid Computing – Doctoral Symposium (CCGrid PhD 2013)

2012 PC Member for the 6th ACM International Conference on Distributed Event-Based Systems (DEBS 2012)

Reviewer Service

2017 Reviewer for
IEEE Transactions on Knowledge and Data Engineering (TKDE)
IEEE Transactions on Systems, Man, and Cybernetics: Systems
Journal of Systems and Software

2017 External Reviewer for
7th International Conference on Cloud Computing and Services Science (CLOSER 2017)

2016 Reviewer for
IEEE Transactions on Software Engineering (TSE)
IEEE Transactions on Parallel and Distributed Systems (TPDS)
IEEE Transactions on Industrial Informatics (TII)
IEEE Transactions on Big Data (TBD)
ACM Transactions on Autonomous and Adaptive Systems (TAAS)
Computer Networks Journal (COMNET)
Journal of Systems and Software (JSS)
Cognitive Computation Journal
IEEE Internet of Things Journal (IoT-J)
Journal of Parallel and Distributed Computing (JPDC)
Expert Systems With Applications (ESWA)
Engineering Science and Technology, an International Journal (JESTECH)
Big Data Research
Sensors
Journal of Sensors

2016 External Reviewer for
20th International Conference on Knowledge Engineering and Knowledge Management (EKAW 2016)

2015 Reviewer for
IEEE Transactions on Big Data (TBD)
IEEE Transactions on Industrial Informatics
IEEE Transactions on Services Computing (TSC)
IEEE Transactions on Software Engineering (TSE)
Computer Networks Journal (COMNET)
Journal of Systems and Software (JSS)
Journal of Parallel and Distributed Computing (JPDC)
Expert Systems With Applications (ESWA)
Information Journal

2015 External reviewer the
9th ACM International Conference on Distributed Event-Based Systems (DEBS 2015)

2014 Reviewer for
IEEE Transactions on Software Engineering (TSE)
IEEE Internet Computing Journal
Computer Languages, Systems and Structures Journal
Journal of Systems and Software (JSS)
Journal of Parallel and Distributed Computing (JPDC)

2014 External reviewer for
8th ACM International Conference on Distributed Event-Based Systems (DEBS 2014)
14th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid 2014)

2013 Reviewer for
ACM Transactions On Internet Technology (ToIT), Special Issue on Event Recognition
ACM Transactions On Software Engineering And Methodology (TOSEM)
International Journal of Big Data Intelligence (IJBDI)
Journal of Parallel and Distributed Computing (JPDC)
Journal of Systems and Software (JSS)

2013 External reviewer for
20th International Conference on High Performance Computing (HiPC 2013)

2012 Reviewer for
Journal of Systems and Software (JSS)

2012 External reviewer for
10th International Conference on Service Oriented Computing (ICSOC 2012)

2011 External reviewer for
5th ACM International Conference on Distributed Event-Based Systems (DEBS 2011)

2010 External reviewer for
4th ACM International Conference on Distributed Event-Based Systems (DEBS 2010)
18th International Symposium on the Foundations of Software Engineering (FSE 2010)
International Journal of Systems and Service-Oriented Engineering (IJSSOE)

Other

2017 Nominated member of the DEBS ToT (Test of Time) Award Committee to determine the paper with the highest impact from DEBS 2007. 11th International Conference on Distributed Event-Based Systems (DEBS 2017)

2017 Invited participant in the Dagstuhl Seminar 17441 on Big Stream Processing Systems

2016 Invited participant in the Dagstuhl Seminar 16341 on Integrating Process-Oriented and Event-Based Systems

2013 Member of the RDF Stream Processing Community Group, W3C

2012 Member of the Doctorate Examination Committee for Jacobo Urbani, Vrije Universiteit Amsterdam

Projects

2015–2016 PASC. Angiogenesis in Health and Disease: in-vivo and in-silicio
Founded by the Swiss National Science Foundation (SNF).
Principal Investigator: Prof. Mauro Pezzè, Prof. Igor Pivkin.
The project aims at defining new computational techniques to investigate the role of multiscale flow phenomena in angiogenesis as enabled by the capabilities of High Performance Computing.

2014–2015 DyStaCCo: Dynamic and Static Analysis Combined for Code Coverage.
Founded by the Swiss National Science Foundation (SNF).
Principal Investigator: Prof. Mauro Pezzè.
The project aims at investigating automatic dataflow testing qualitatively and quantitatively, combining static and dynamic analysis to improve the coverage of relevant targets.
I participated to the project as scientific contributor and as a supervisor for a PhD student.

2012–2014 Commit P20 – IV-E (e-Infrastructure Virtualization for e-Science Applications).
Co-financed by the dutch government.
Project Leader: Prof. Henri Bal.
The project aims at investigatigating how to design a programmable e-Science architecture while describing the infrastructure components and optimize them for typical usage scenarios.
I participated to the project as scientific contributor.

2012–2014 Green Move.
Co-financed by Regione Lombardia.
DEIB, Politecnico di Milano.
The project aims at promoting sustainable mobility in large cities by designing, implementing, and evaluating novel approaches for sharing electric vehicles in the city of Milan.
I participated to the project as scientific contributor.

2009–2012 SMSCom. Self Managing Situated Computing.
ERC Advanced Investigator Grant N. 227977.
Principal Investigator: Prof. Carlo Ghezzi.
The project aims at developing a consistent, integrated, and homogeneous set of methods and tools for the design, validation, and operation of dependable self-managing situational software.
I participated to the project as scientific contributor.

Formal Presentations

Aug 2016 *Managing Streams of Events: an Overview*, Tutorial at the Dagstuhl Seminar on Combining Process Oriented and Event-Based Systems, Dagstuhl (Germany).

June 2016 *Taming Velocity and Variety Simultaneously in Big Data with Stream Reasoning*, with Daniele Dell'Aglio, Tutorial at the 10th International Conference on Distributed Event-Based Systems (DEBS 2016), Irvine CA (USA)

May 2016 *Managing Streams of Data: Lessons Learned and Open Challenges*, **Invited Talk**, TU Darmstadt (Germany).

February 2016 *Managing Streams of Data: Lessons Learned and Open Challenges*, **Invited Talk**, Ca' Foscari University of Venice, Venice (Italy).

July 2015 *Managing Streams of Data: Lessons Learned and Open Challenges*, **Invited Talk**, Politecnico di Milano, Milano (Italy).

June 2015 *Efficient Analysis of Event Processing Applications*, 9th International Conference On Distributed Event-Based Systems (DEBS 2015). Oslo (Norway).

May 2015 *Reactive Programming: A Walkthrough*, with G. Salvaneschi and G. Tamburrelli. Technical Briefing at the 37th International Conference on Software Engineering (ICSE 2015). Firenze (Italy).

April 2015 *Toward an Intelligent Event-Based Communication Infrastructure: Lessons Learned and Open Challenges*, **Invited Talk**, Fondazione Bruno Kessler (FBK). Trento (Italy).

May 2014 *Learning From the Past: Automated Rule Generation for Complex Event Processing*, 8th International Conference On Distributed Event-Based Systems (DEBS 2014). Mumbay (India).

May 2014 *We have a DREAM: Distributed Reactive Programming with Consistency Guarantees*, 8th International Conference On Distributed Event-Based Systems (DEBS 2014). Mumbay (India).

November 2013 *Large Scale Reasoning over Dynamic Data*, COMMIT P20 Meeting, UvA, Amsterdam (The Netherlands).

July 2013 *Toward an Intelligent Event-Based Communication Infrastructure: Lessons Learned and Open Challenges*, **Invited Talk**, TU Darmstadt (Germany).

December 2012 *High-Performance Location-Aware Publish-Subscribe on GPUs*, 13th International Conference On Middleware (Middleware 2012). Montreal (Canada).

May 2012 *Combining Expressiveness and Efficiency in a Complex Event Processing Middleware*, **Invited Talk**, VU Amsterdam, Amsterdam (The Netherlands).

February 2012 *Combining Expressiveness and Efficiency in a Complex Event Processing Middleware*, PhD Thesis Defense, Politecnico di Milano, Milano (Italy).

October 2011 *Adopting GPUs for Low Latency Event Processing*, Distributed Programming Group Seminars, Purdue University, West Lafayette, Indiana (US).

July 2011 *High Performance Content-Based Matching Using GPUs*, 5th International Conference On Distributed Event-Based Systems (DEBS 2011). New York (US).

July 2011 *Processing Flows of Information: From Data Stream to Complex Event Processing*, with G. Cugola, Tutorial in the 5th International Conference On Distributed Event-Based Systems (DEBS 2011). New York (US).

February 2011 *Complex Event Processing on GPU Hardware: an Experience Report*, SMSCom Seminar, Politecnico di Milano, Milano (Italy)

November 2010 *A Column Generation Approach for the Operator Placement Problemg*, Minor Research Topic Seminar, Politecnico di Milano, Milano (Italy)

July 2010 *TESLA: a Formally Defined Language for Complex Event Processing*, 4th International Conference on Distributed Event Based Systems (DEBS 2010). Cambridge (UK)

July 2010 *TESLA: a Formally Defined Language for Complex Event Processing*, SMSCom Seminar, Milano (Italy)

June 2010 *Combining Expressiveness, Efficiency and Scalability in a Complex Event Processing Middleware*, PhDay Politecnico di Milano, Milano (Italy)

February 2010 *TESLA: a Formally Defined Language for Complex Event Processing*, D-ASAP Meeting, Milano (Italy)

December 2009 *RACED: an Adaptive Middleware for Complex Event Detection*, 8th International Workshop on Adaptive and Reflective Middleware (ARM 09), Urbana Champaign (US)

July 2009 *Context Aware Publish-Subscribe: Model, Implementation and Evaluation*, 8th International Symposium on Computers and Communications (ISCC09), Sousse, (Tunisia)

June 2009 *Context Aware Middleware*, SMSCom Meeting, Como (Italy)

Software

T-Rex a Complex Event Processing Engine. Implements different processing algorithms, some of them explicitly tailored to take advantage of parallel hardware (both multi-core CPUs and GPUs).

DisTRex a distributed implementation of T-Rex, which embeds communication protocols to distribute the processing load to better support large scale.

PCM Parallel Content-Based Matching. A Content-Based Matching engine conceived to reduce processing latency taking advantage of parallel hardware (both CPUs and GPUs).

CLCB Cuda Location-Aware Content-Based Matcher. A Location-Aware and Content-Based Matching engine conceived to reduce processing latency taking advantage of CUDA GPUs hardware.

iCEP a learning framework for automated Complex Event Processing rule generation.

CAVE a tool to support developers in analyzing the behavior of an event processing application. CAVE efficiently verifies correctness properties based on the application and on the assumptions that developers have about the environment in which the application operates.

DREAM A middleware for Distributed Reactive Programming in Java, which offers flexible guarantees for the propagation of changes across multiple distributed components.

SLIM a middleware for service location and invocation in mobile wireless sensor and actuator networks.

ASIA a publish/subscribe middleware that offers a lightweight support for gathering aggregation information (e.g., client population) about the system. It does not focus on a specific kind of aggregation. Instead, it generalizes at the infrastructure level: each application can request its own specific type of aggregation information.

Publications

Papers in International Journals

[1] Gianpaolo Cugola and Alessandro Margara. SLIM: Service Location and Invocation Middleware for Mobile Wireless Sensor and Actuator Networks. *International Journal of Systems and Service-Oriented Engineering (IJSSOE), Special Issue on "Engineering Middleware for Service-Oriented Computing"*, 1:60–74, 2010.

[2] Gianpaolo Cugola and Alessandro Margara. Complex Event Processing with T-REX. *Journal of Systems and Software*, 85(8):1709–1728, 2012.

[3] Gianpaolo Cugola and Alessandro Margara. Low Latency Complex Event Processing on Parallel Hardware. *Journal of Parallel and Distributed Computing*, 72(2):205–218, 2012.

[4] Gianpaolo Cugola and Alessandro Margara. Processing flows of information: From Data Stream to Complex Event Processing. *ACM Computing Surveys*, 44(3):15:1–15:62, 2012.

[5] Gianpaolo Cugola and Alessandro Margara. Deployment Strategies for Distributed Complex Event Processing. *Computing*, 95(2):129–156, 2013.

[6] Alessandro Margara and Gianpaolo Cugola. High-Performance Publish-Subscribe Matching Using Parallel Hardware. *IEEE Transactions on Parallel and Distributed Systems*, 25(1):126–135, 2014.

[7] Alessandro Margara, Jacopo Urbani, Frank van Harmelen, and Henri Bal. Streaming the Web: Reasoning over Dynamic Data. *Web Semantics: Science, Services and Agents on the World Wide Web*, 25(0):24–44, 2014.

[8] Gianpaolo Cugola, Alessandro Margara, Matteo Matteucci, and Giordano Tamburrelli. Introducing Uncertainty in Complex Event Processing: Model, Implementation, and Validation. *Computing*, 97(2):103–144, 2015.

[9] Lorenzo Affetti, Riccardo Tommasini, Alessandro Margara, Gianpaolo Cugola, and Emanuele Della Valle. Defining the execution semantics of stream processing engines. *Journal of Big Data*, 4(1):12, 2017.

[10] Francesco Bianchi, Alessandro Margara, and Mauro Pezzè. A Survey of Current Trends in Testing Concurrent Software Systems. *IEEE Transactions on Software Engineering*, 2017. To appear.

Papers in International Conferences

[11] Gianpaolo Cugola, Alessandro Margara, and Matteo Migliavacca. Context-Aware Publish-Subscribe: Model, Implementation, and Evaluation. In *IEEE Symposium on Computers and Communications*, ISCC '09, pages 875–881. IEEE, 2009.

[12] Gianpaolo Cugola and Alessandro Margara. TESLA: a Formally Defined Event Specification Language. In *Proceedings of the International Conference on Distributed Event-Based Systems*, DEBS '10, pages 50–61. ACM, 2010.

[13] Alessandro Margara and Gianpaolo Cugola. High Performance Content-Based Matching Using GPUs. In *Proceedings of the International Conference on Distributed Event-Based System*, DEBS '11, pages 183–194. ACM, 2011.

[14] Giovanni Alli, Luciano Baresi, Andrea Bianchessi, Gianpaolo Cugola, Alessandro Margara, Angelo Morzenti, Carlo Ongini, Emanuele Panigati, Matteo Rossi, Sante Rotondi, Sergio Savaresi, Fabio Alberto Schreiber, Alessandro Sivieri, Letizia Tanca, and Edoardo Vannutelli Depoli. Green Move: Towards Next Generation Sustainable Smartphone-Based Vehicle Sharing. In *Proceedings of the Conference on Sustainable Internet and ICT for Sustainability*, SustainIT '12. IEEE, 2012.

[15] Gianpaolo Cugola and Alessandro Margara. High-Performance Location-Aware Publish-Subscribe on GPUs. In *Proceedings of the International Conference on Middleware*, Middleware '12, pages 312–331. Springer, 2012.

[16] Elisabetta Di Nitto, Daniel J. Dubois, and Alessandro Margara. Reconfiguration Primitives for Self-adapting Overlays in Distributed Publish-Subscribe Systems. In *Proceedings of the International Conference on Self-Adaptive and Self-Organizing Systems*, SASO '12, pages 99–108. IEEE, 2012.

[17] Sebastian Frischbier, Alessandro Margara, Tobias Freudenreich, Patrick Eugster, David Eyers, and Peter Pietzuch. Aggregation for Implicit Invocations. In *Proceedings of the International Conference on Aspect-Oriented Software Development*, AOSD '13, pages 109–120. ACM, 2013.

[18] Thomas Scharrenbach, Jacopo Urbani, Alessandro Margara, Emanuele Della Valle, and Abraham Bernstein. Seven Commandments for Benchmarking Semantic Flow Processing Systems. In *Proceedings of the Extended Semantic Web Conference*, ESWC '13, pages 305–319. Springer, 2013.

[19] Jacopo Urbani, Alessandro Margara, Ceriel Jacobs, Frank Harmelen, and Henri Bal. DynamiTE: Parallel Materialization of Dynamic RDF Data. In *Proceedings of the International Semantic Web Conference*, ISWC '13, pages 657–672. Springer, 2013.

[20] Sebastian Frischbier, Erman Turan, Michael Gesmann, Alessandro Margara, David Eyers, Patrick Eugster, Peter Pietzuch, and Alejandro Buchmann. Effective Runtime Monitoring of Distributed Event-Based Enterprise Systems with ASIA. In *Proceedings of the International Conference on Service Oriented Computing and Application*, SOCA '14, pages 41–48. IEEE, 2014.

[21] Alessandro Margara, Gianpaolo Cugola, and Giordano Tamburrelli. Learning from the Past: Automated Rule Generation for Complex Event Processing. In *Proceedings of the International Conference on Distributed Event-Based Systems*, DEBS '14, pages 47–58. ACM, 2014.

[22] Alessandro Margara and Guido Salvaneschi. We Have a DREAM: Distributed Reactive Programming with Consistency Guarantees. In *Proceedings of the International Conference on Distributed Event-Based Systems*, DEBS '14, pages 142–153. ACM, 2014.

[23] Giordano Tamburrelli and Alessandro Margara. Towards Automated A/B Testing. In *Proceedings of Search-Based Software Engineering*, SSBSE '14, pages 184–198. Springer, 2014.

[24] Jacopo Urbani, Alessandro Margara, Ceriel J. H. Jacobs, Spyros Voulgaris, and Herni Bal. AJIRA: a Lightweight Distributed Middleware for MapReduce and Stream Processing. In *Proceedings of the International Conference on Distributed Computing Systems*, ICDCS '14, pages 545–554. IEEE, 2014.

[25] Gianpaolo Cugola, Alessandro Margara, Mauro Pezzè, and Matteo Pradella. Efficient Analysis of Event Processing Applications. In *Proceedings of the International Conference on Distributed Event-Based Systems*, DEBS '15, pages 10–21. ACM, 2015.

[26] Giovanni Denaro, Alessandro Margara, Mauro Pezzè, and Mattia Vivanti. Dynamic Data Flow Testing of Object Oriented Systems. In *Proceedings of the International Conference on Software Engineering*, ICSE '15, pages 947–958. IEEE, 2015.

[27] Lorenzo Affetti, Alessandro Margara, and Gianpaolo Cugola. Flowdb: Integrating stream processing and consistent state management. In *Proceedings of the International Conference on Distributed Event Based Systems*, DEBS '17. ACM, 2017.

[28] Alessandro Margara, Daniele Dell'Aglio, and Abraham Bernstein. Break the windows: Explicit state management for stream processing systems. In *Proceeding of the International Conference on Extending Database Technology*, EDBT '17, pages 482–485. ACM, 2017.

[29] Daniele Rogora, Michele Papalini, Koorosh Khazaei, Alessandro Margara, Antonio Carzaniga, and Gianpaolo Cugola. High-throughput subset matching on commodity gpu-based system. In *Proceedings of the European Conference on Computer Systems*, EuroSys '17. ACM, 2017.

Papers in International Workshops

[30] Gianpaolo Cugola and Alessandro Margara. RACED: an Adaptive Middleware for Complex Event Detection. In *The 8th Workshop on Adaptive and Reflective Middleware*, ARM '09, pages 1–6. ACM, 2009.

[31] David Eyers, Tobias Freudenreich, Alessandro Margara, Sebastian Frischbier, Peter Pietzuch, and Patrick Eugster. Living in the Present: On-The-Fly Information Processing in Scalable Web Architectures. In *Proceedings of the International Workshop on Cloud Computing Platforms*, CloudCP '12, pages 6:1–6:6. ACM, 2012.

[32] Alessandro Margara and Guido Salvaneschi. Ways to React: Comparing Reactive Languages and Complex Event Processing. In *Workshop on Reactivity, Events, and Modularity*, REM '13, 2013.

[33] Alessandro Margara, Mauro Pezzè, Igor Pivkin, and Mauro Santoro. Towards an Engineering Methodology for Multi-Model Scientific Simulations. In *Proceedings of the International Workshop on Software Engineering for High Performance Computing in Science*, SE4HPCS '15, pages 51–55. IEEE, 2015.

[34] Alessandro Margara and Guido Salvaneschi. Consistency types for safe and efficient distributed programming. In *Proceedings of the Workshop on Formal Techniques for Java-like Proframs*, FTfJP '17. ACM, 2017.

Tutorials in International Conferences

[35] Alessandro Margara and Gianpaolo Cugola. Processing Flows of Information: from Data Stream to Complex Event Processing. In *Proceedings of the International Conference on Distributed Event-Based System*, DEBS '11, pages 359–360. ACM, 2011.

[36] Guido Salvaneschi, Alessandro Margara, and Giordano Tamburrelli. Reactive Programming: a Walkthrough. In *Proceedings of the International Conference on Software Engineering (ICSE Technical Briefing)*, ICSE '15, pages 953–954. IEEE, 2015.

[37] Emanuele Della Valle and Alessandro Margara. Tutorial: Taming Velocity and Variety Simultaneously in Big Data with Stream Reasoning. In *Proceedings of the International Conference on Distributed Event-Based Systems*, DEBS '16, pages 394–401. ACM, 2016.

[38] Alexander Artikis, Matthias Weidlich, Alessandro Margara, Martin Ugarte, and Stijn Vansummeren. Complex event recognition languages. In *Proceedings of the International Conference on Distributed Event Based Systems*, DEBS '17. ACM, 2017.

Book Chapters

[39] Gianpaolo Cugola and Alessandro Margara. The Complex Event Processing (CEP) Approach. In Francesco Colace, Massimo De Santo, Vincenzo Moscato, Antonio Picariello, Fabio A. Schreiber, and Letizia Tanca, editors, *Data Management in Pervasive Systems*. Springer, 2015.

Posters in International Conferences

[40] Sebastian Frischbier, Alessandro Margara, Tobias Freudenreich, Patrick Eugster, David Eyers, and Peter Pietzuch. ASIA: Application-Specific Integrated Aggregation for Publish/Subscribe Middleware. In *Proceedings of the International Conference on Middleware*, Middleware '12, 2012.

[41] Sebastian Frischbier, Alessandro Margara, Tobias Freudenreich, Patrick Eugster, David Eyers, and Peter Pietzuch. McCAT: Multi-cloud Cost-Aware Transport. In *Proceedings of EuroSys (Poster Session)*, EuroSys '14. ACM, 2014.

Recent Papers Submitted for Publication

[42] Alessandro Margara and Guido Salvaneschi. On the Semantics of Distributed Reactive Programming: the Cost of Consistency. *IEEE Transactions on Software Engineering*, 2017. Under review.

Technical Reports and Thesis

[43] Alessandro Margara and Federico Malucelli. A Column Generation Approach for the Operator Placement Problem. Technical report, Politecnico di Milano, 2008. Minor Research Report.

[44] Alessandro Margara and Luca Perfetti. Realizzazione e Confronto di Protocolli per il Routing Content-Based. Technical report, Politecnico di Milano, 2008. Master Thesis.

[45] Alessandro Margara, Sebastian Frischbier, Tobias Freudenreich, Patrick Eugster, David Eyers, and Peter Pietzuch. ASIA - Application Specific Integrated Aggregation for Publish-Subscribe Systems. Technical report, 2011.

[46] Alessandro Margara. Combining Expressiveness and Efficiency in a Complex Event Processing Middleware. Technical report, Politecnico di Milano, 2012. PhD Thesis.

[47] Alessandro Margara, Gianpaolo Cugola, and Giordano Tamburrelli. Towards Automated Rule Learning for Complex Event Processing, 2013.