

Emanuele Della Valle

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Education: 2015 – PhD – *On Stream Reasoning* – Faculty of Science, Computer Science, Vrije Universiteit Amsterdam, the Netherlands – promoter Frank van Harmelen

2000 - Master "Laurea in ingegneria informatica" (Computer Science and Engineering) - Apprendimento per rinforzo in presenza di aliasing percettivo: uno studio sull'uso del registro di memoria (*Reinforcement Learning with perceptual aliasing: a study on the usage of the memory registry*) - Politecnico di Milano, Italy

Current Position: 2008-now - *Assistant Professor* (Ricercatore di Ruolo confermato), Department of Electronics, Information and Bioengineering of Politecnico di Milano

Past Position 2001-2008 - *Program Manager* of Semantic Web Practice, CEFRIEL, Italy

Highlights

SHORT BIO

Emanuele Della Valle holds a PhD in Computer Science from the Vrije Universiteit Amsterdam and a Master degree in Computer Science and Engineering from Politecnico di Milano. He is an assistant professor at the [Dpt. of Electronics, Information and Bioengineering](#) of the [Politecnico di Milano](#) since 2008.

In almost 20 years of professional activity, his interests covered Data Science, Big Data, Stream Processing, Semantic technologies, Web Information Retrieval, and Service Oriented Architectures. He started the [stream reasoning](#) research field in 2007 positioning it at the intersection between Stream Processing and Artificial Intelligence.

He focused the research community's interest on this theme through a number of personal initiatives (workshops, projects, journal papers) that contributed to establishing Stream Reasoning as a recognized research and industrial sector. In the Big Data era, it is a method to tame simultaneously the velocity (analysing data streams to enable real-time decisions) and variety (integrating heterogeneous data) dimensions of Big Data. In this field, he proposed semantic and syntactic extensions to the Semantic Web stack (i.e., RDF streams, Continuous SPARQL, continuous reasoning and RDF Stream and Event Processing Language). Some of those extensions are currently on the path towards standardization at a W3C in the [RDF Stream Processing community group](#). In the last five years, the two principal conferences on Semantic Web (ISWC and ESWC) dedicated a track to data streams to create a forum for Stream Reasoning research. Starting from 2011, he organized more than 17 tutorials and workshops on Stream Reasoning. Practitioners in the Stream Reasoning community downloaded thousands of times the C-SPARQL Engine (the open source Stream Reasoner engine originally developed at Politecnico di Milano and currently maintained by several universities). His work on Stream Reasoning was applied in analysing Social Media, Mobile Telecom and IoT data streams in collaboration with Telecom Italia, IBM, Siemens, Oracle, Indra, and Statoil.

[His h-index is 30 \(23 since 2014\). He was cited 3690 times \(2267 since 2014\).](#) He is a member of the editorial board of Journal of Web Semantics. He co-authored: [22 journal articles in TOIT, JWS, SWJ, Sigmod Records, Big Data Research, Data Science, IJSWIS, IEEE IS, IEEE IC, IEEE MM, TGIS, Sensors and CMBP; 33 conference papers in major conferences in ISWC, ESWC, WWW, ICWE, EKAW, and DEBS;](#) a book on [Web Information Retrieval](#) (2013), the [first book in Italian about Semantic Web](#) (2008); and more than 70 other manuscripts including minor conferences, book chapters, workshop papers and posters.

He was Principal Investigator of two EIT Digital activities in Data Science for Digital Cities between 2013 and 2015. He was Principal Investigator of the FP7 Service Finder project. He was coordinating the Stream Reasoning and Urban Computing activities of the FP7 [LarKC project](#). He was involved in other 10 EU projects in H2020, FP7, FP6 and FP5.

From 2001 to 2008, he worked in [CEFRIEL](#). Between 2001 and 2004, he worked in strategic consultancy IT projects of CEFRIEL in eBusiness, eGovernment and eHealth. In 2003, he started the [Semantic Web Practice](#) of CEFRIEL that he coordinated until 2008. In the same time period, he was an Aggregated Professor of Advanced Topics Information Systems at Politecnico di Milano (2007-09).

SELECTED NOMINATIONS, AWARDS AND PRICES

- 6-2019 D2IA: Stream Analytics on User-Defined Event Intervals won CAiSE'19 *best paper award*
- 10-2016 CitySensing: Fusing City Data for Visual Storytelling wins IEEE MM 16 *best paper award*
- 6-2014 ECSTASYS wins the *AI mashup Challenge 2014*
- 9-2013 *IBM Faculty Award 2013* for his research program on City Data Fusion
- 5-2013 TwindexFuorisalone: wins the *AI mashup Challenge 2013*
- 9-2011 Bottari wins the *Semantic Web Challenge 2011*
- 6-2011 Traffic LarKC wins the *AI mashup Challenge 2011*
- 6- 2007 Enabling the EU Patient Summary Through Triplespaces wins CBMS *best paper award*
- 9- 2006 *IBM Faculty Award 2006* for Model-Driven Semantic Web Application Development

SELECTED TEACHING ACTIVITIES

For PhD School, Politecnico di Milano, Italy (bi-annual courses)

Since 2012, he organized and lectured two PhD courses: *Stream and Complex Event Processing* (3 editions) and *A Multidisciplinary view on Big Data* (3 editions). He was also lecturing in 3 editions of the PhD course on *Integration And Computational Analysis Of Genomic And Proteomic Information*.

For the M.Sc. in Information Engineering, Politecnico di Milano, Italy

He has been lecturing for Politecnico di Milano since 2004 when he taught *Advanced Topics in Information Systems*. Since he got his current position in 2008, he has been teaching *Digital Project Management* (formerly, Planning and Managing Software Project). In 2015, he experimentally lectured *Interoperability and Semantic Technologies*. In 2016, prof. Marco Brambilla and he started a course on *Web Science* that in 2019 they rebranded in *Unstructured and Streaming Data Engineering*. Since 2008, he has been teaching assistant for prof. Marco Masseroli in the course *ICT for Health Care and Life Science*, where he teaches healthcare system interoperability (HL7) and Semantic Technologies.

For professionals

His current offering includes 4 days of Data-driven Decision Making for managers and 40 days of Data Science and Engineering for IT professionals that covers the whole data-driven decision making from data ingestion to Machine Learning model deployments. This offering covers Big Data (Hadoop), Data Science (SparkML, python ML, Keras and pytorch), Data Engineering (Spark, and Kafka), Data Visualization (Tableau, R and Python libraries), NoSQL (Memcached, Redis, MongoDB, Cassandra, neo4j), Stream Processing (Esper, InfluxDB), Semantic Technologies (RDF, OWL, Sparql, and R2RML), Web Technologies and Java course for professionals that he offers since 2000.

SUPERVISION OF GRADUATE STUDENTS

Since 2008, he supervised 4 PhD Students in PhD School of Politecnico di Milano. One of the students, Daniele Dell'Aglio won the IBM PhD Fellowship award 2014/15. Since 2016, he is also co-supervising a PhD student for the PhD School in Information and Communication Technology of the University of Trento. In the same time period, he supervised 36 Master Students of the School of Industrial and Information Engineering of Politecnico di Milano. While he was working in CEFRIEL (2006-08) he co-supervised other 3 master students.

ORGANISATION OF SCIENTIFIC MEETINGS

He was Track Chair for the Extended Semantic Web Conference series (4 times between 2011 and 2019). In 2019, he was a senior program committee member of the International Semantic Web Conference series. Since 2009, he chairs the Stream Reasoning workshop series (10 editions under the titles Stream Reasoning, Ordering and Reasoning, and Web Stream Processing).

INSTITUTIONAL RESPONSIBILITIES

- 2019–2020 Scientific Director – Master in Big Data Engineering (1st ed.), Politecnico di Milano
- 2016–2018 Scientific Director – Master in Analytics & Business Intelligence (3rd ed.), Politecnico di Milano
- 2008– Member of the Internationalization Committee, Politecnico di Milano

COMMISSIONS OF TRUST

He is *Area Editor* of the Journal of Web Semantics since 2014. He is a member of the editorial board of several international journals including ACM – TOIT, TWeb, Sigmod Records & Trans Syst Man Cybern Syst, IEEE – IC, IS & TSE, Elsevier JWS, Eng Appl Artif Intell., DKE, & JMAT, Springer – KAIS, IOS press – SWJ, IGI Global IJSWIS. He is also a member of the Program Committee of WWW, ISWC, ESWC, ICWE, EKAW, and DEBS conference series.

MAJOR COLLABORATIONS

- Prof. Stefano Ceri – Politecnico di Milano
- Prof. Frank van Harmelen – Vrije Universiteit Amsterdam
- Prof. Óscar Corcho – Universidad Politécnica de Madrid
- Prof. Volker Tresp - Ludwig Maximilian University of Munich
- Prof. Ian Horrocks – University of Oxford
- Prof. Abraham Bernstein – University of Zurich

RESEARCH ACTIVITIES

- 2008– Stream Reasoning: taming velocity and variety of Big Data simultaneously
- 2010– Urban Data Science at Scale
- 2001– Web Information Management
- 2011–2014 Games with a Purpose
- 2006–2012 Semantic Web Services

Competitive Funding

He was awarded funds for more than a decade: around 1.4M€ with the EIT Digital activities on Consumer-centric demand forecast and sale predictions for the fashion industry, Shared Cityhub for Parcel Deliveries, Bootcamp on Data Science and Engineering, Data Science Blended Course for non-IT Professionals, City Data Fusion for Event Management, 3cixty, the High Impact Initiative on Future Cloud, CrowdInsights, BeCamGreen and Welcome; 3M€ with the EU projects SEEMP, TripCom, SUPER, and LarKC; and around 300K€ with the National funded project NeP4B.

SELECTED PUBLICATIONS

Top five Journal Articles

- [j3] E. Della Valle, S. Ceri, F. van Harmelen, D. Fensel: It's a Streaming World! Reasoning upon Rapidly Changing Information. *IEEE Intelligent Systems* 24(6): 83-89 (2009)
- [j9] D. F. Barbieri, D. Braga, S. Ceri, E. Della Valle, Yi Huang, V. Tresp, A. Rettinger, H. Wermser: Deductive and Inductive Stream Reasoning for Semantic Social Media Analytics. *IEEE Intelligent Systems* 25(6): 32-41 (2010)
- [j19] D. Dell'Aglio, E. Della Valle, F. van Harmelen and A. Bernstein: Stream reasoning: A survey and outlook. *Data Sci.* 1(1-2): 59-83 (2017)
- [j20] M. Hirzel, G. Baudart, A. Bonifati, E. Della Valle, S. Sakr, A. Vlachou: Stream Processing Languages in the Big Data Era. *SIGMOD Record* 47(2): 29-40 (2018)
- [j17] M. Balduini, E. Della Valle, M. Azzi, R. Larcher, F. Antonelli, P. Ciuccarelli: CitySensing: Fusing City Data for Visual Storytelling. *IEEE MultiMedia* 22(3): 44-53 (2015) **BEST PAPER**

Other Selected Journal Articles

- [j1] M. Brambilla, S. Ceri, F. M. Facca, I. Celino, D. Cerizza, E. Della Valle: Model-driven design and development of semantic Web service applications. *ACM Trans. Internet Techn.* 8(1) (2007)
- [j11] M. Balduini, I. Celino, D. Dell'Aglio, E. Della Valle, Yi Huang, T. Lee, S.-H. Kim, V. Tresp: BOTTARI: An augmented reality mobile application to deliver personalized and location-based recommendations by continuous analysis of social media streams. *J. Web Sem.* 16: 33-41 (2012)
- [j16] D. Dell'Aglio, E. Della Valle, J.-P. Calbimonte, Ó. Corcho: RSP-QL Semantics: a Unifying Query Model to Explain Heterogeneity of RDF Stream Processing Systems. *Int. J. Semantic Web Inf. Syst.* 10(4): 17-44 (2014)

Selected Conference Papers

- [c26] D. F. Barbieri, D. Braga, S. Ceri, E. Della Valle, M. Grossniklaus: C-SPARQL: SPARQL for continuous querying. *WWW 2009*: 1061-1062
- [c39] D. F. Barbieri, D. Braga, S. Ceri, E. Della Valle, Michael Grossniklaus: Incremental Reasoning on Streams and Rich Background Knowledge. *ESWC (1) 2010*: 1-15
- [c21] E. Della Valle, S. Ceri, D. F. Barbieri, D. Braga, A. Campi: A First Step Towards Stream Reasoning. *FIS 2008*: 72-81
- [c4] M. Brambilla, I. Celino, S. Ceri, D. Cerizza, E. Della Valle, F. Michele Facca: A Software Engineering Approach to Design and Development of Semantic Web Service Applications. *International Semantic Web Conference 2006*: 172-186
- [c47] Sara Magliacane, Alessandro Bozzon, Emanuele Della Valle: Efficient Execution of Top-K SPARQL Queries. *International Semantic Web Conference (1) 2012*: 344-360
- [c52] M. Balduini, E. Della Valle, D. Dell'Aglio, M. Tsytsarau, T. Palpanas, C. Confalonieri: Social Listening of City Scale Events Using the Streaming Linked Data Framework. *International Semantic Web Conference (2) 2013*: 1-16
- [c100] A. Awad, R. Tommasini, M. Kamel, E. Della Valle, S. Sakr: D2IA: Stream Analytics on User-Defined Event Intervals. *CAiSE 2019*: 346-361 **BEST PAPER**

MAIN RESEARCH ACCOMPLISHMENTS AND FUTURE GOALS

Stream Reasoning: taming velocity and variety of Big Data simultaneously

More and more applications require real-time processing of data streams in oil&gas operations, in weather monitoring, in customer relationship management, in Smart Cities and in Social Media Analytics. For instance, in the last two domains, is public transportation where the people are? Who is driving the discussion about the top 10 emerging topics across all the social networks?

A system able to answer those queries must:

1. handle *massive datasets*,
2. process *data streams* on the fly,
3. cope with *heterogeneous, incomplete and noisy* data,
4. provide *reactive answers*,
5. support *fine-grained information access*, and
6. integrate *complex domain models*.

Indeed, systems capable of tame the velocity dimension of Big Data exist. They can provide reactive fine-grained information access and analysis even in the presence of noisy data streams. Similarly, recent research on Data Integration and Semantic technologies – in particular on scalable Ontology Based Data Access (OBDA) – can tame the variety dimension of Big Data. OBDA can offer fine-grained information access to heterogeneous and incomplete datasets by reasoning on complex domain models so to rewrite ontological queries in SQL. However, none of those solutions can tame velocity and variety simultaneously especially when the information need is a complex data analysis.

In 2008, much before the term Big Data was coined, in [j3] Emanuele Della Valle, Stefano Ceri, Frank van Harmelen and Dieter Fensel identified this challenge and formulate the Stream Reasoning research question:

is it possible to make sense in real time of multiple, heterogeneous, gigantic and inevitably noisy and incomplete data streams in order to support the decision process of extremely large numbers of concurrent users?

In ten years of research in Stream Reasoning [j19], Emanuele Della Valle conducted investigations and wrote papers that envision, elaborate, evaluate and discuss many aspects of this research question. His papers document that *a)* the Semantic Web stack can be extended so to incorporate streaming data as a first class citizen [j6,j8,j12,j16], *b)* the Stream Reasoning task is feasible [j11,j14], *c)* the very nature of streaming data offers opportunities to optimise reasoning tasks where data are ordered by recency and can be forgotten after a while, *d)* a combination of deductive and inductive stream reasoning techniques can cope with incomplete and noisy data [j9], and *e)* there are application domains where Stream Reasoning offers an adequate solution [j11,j15,j17].

Moreover, from the lessons learnt in these years stems his most recent research question:

can orders (beyond the specific order in time) be harnessed to optimise the reasoning tasks?

Answering this question is central to his current and future investigations [j13].

Urban Data Science at Scale

Nowadays torrents of data is capturing the digital reflexes of our cities and it is tracking their changes with a minimum delay. This makes urban data a perfect environment to perform applied research in Data Science at Scale [j22,j20,j5,j10,j11,j14,j15,j17].

Indeed, it is becoming possible to feel the pulse of our cities by fusing in real-time all those torrents of data using Big Data technologies, in particular semantic technologies and stream processing methods. Moreover, scalable advance data analytics techniques can be used to make sense of such a pulse and deliver innovative services such as:

- telling stories about City Scale Events [j17] (e.g., EXPO 2015 or Milan Design and Fashion weeks) fusing Mobile Telecom and Social Media Data (joint work with Telecom Italia)
- predicting traffic based not only on the traffic sensors, but also on the weather conditions and the events happening in the city [j10] (joint work with SIEMENS); and
- recommending venue using continuous analysis of social media streams [j11,j14,j15,c52] (joint work with Saltlux, SIEMENS and TU Delft).

With those studies, Emanuele Della Valle won the AI mashup challenge 2011, the Semantic Web challenge 2011 and the AI mashup challenge 2013. With his research program on City Data Fusion, he won the IBM Faculty award 2013. The story telling solution [j17], which was displayed for the entire duration of EXPO Milano 2015 in EXPO Gate and on 11 view walls in the EXPO Area, won the best paper award of IEEE Multi-Media. Building on those achievements, in 2016, he opened a start-up (Fluxedo) to monetize the skills of his research group and sell services on the market.

His current interest in this area is in extending OBDA techniques and methodologies to work with advanced analytics tasks. This is particularly challenging because state-of-the-art OBDA can tame data variety only if the information need is a conjunctive query. If successful, this stream of research can pave the way to a new generation of data analytics tools that work also in presence of high data variety without incurring in the current high costs of data wrangling.

Web Information Management

The diffusion of the World Wide Web boosted at the turn of the century research on information retrieval. Big players such as Google and Yahoo! were the primary contributors of a technology for fast access to Web information [c28]. Searching capabilities are now integrated in most information systems, ranging from business management software and customer relationship systems to social networks and mobile phone applications. Emanuele Della Valle's major interest within this filed is in Web Data Publishing and Semantic Search. His major contribution to the filed are Squiggle [c9,c5,c3] – a framework for deploying domain specific Semantic Search engines –, SOIP [c1,c2,c30,c32,c42,c43] – a flexible frameworks for Information Portal powered by Semantic Technologies – and the experimental usage of Triple Space (a platform for distribute publishing of RDF) for sharing Patient Summaries [j4,c6,c8,c17]. He also contributed the Search Computing project lead by prof. Stefano Ceri [j7,c29,c35,c36,c37,c38]. In 2013, he was co-author a book on Web Information Retrieval [b3]. His current and future work in this area is on how to automatically add to knowledge graphs entities in the long tail (e.g., emerging fashion designers or temporary stores) by continuously analyse social media [c77].

Game with a Purpose

In the beginning of the 2010s', crowdsourcing and human computation became a major topics in computer Science. He investigated the application of those topics to Semantic technologies design, coordinating the development and evaluating two Games with a Purpose (GWAP): UrbanMatch that addresses the record linkage problem [c48] and Urbanopoly that collects and validates urban linked data [c46]. The results lead to the development of an open source framework for image-centric GWAPs (namely Get The Picture) that was positively used by organization independent from Politecnico di Milano to develop real-world services, e.g., IndoMilando and Pic Mi App.

Semantic Web Services

In the early 2000s, one of the most challenging promises of the Web Services was to enable the construction of flexible business applications, spanning over several enterprises and capable of dynamic composition for presenting to their clients the “best” business options. In his attempts to realize those promises, he participated to the investigations on Semantic Web Services, i.e., the attempt to augment Web Services with semantic annotations and to operate reasoners on top of such descriptions for performing business choices, thus matching user's goals to system's resources. Emanuele Della Valle worked on this topic under the supervision of prof. Stefano Ceri. His major contributions are Glue, a mediator based Web Service Discovery Engine [o2], and SWE-ET [j1,c4], a model-driven approach to Design and Development of Semantic Web Service Applications. With this framework he won the IBM faculty award 2006.

Education Activities

Scientific Director

- [2019/2020] Scientific Director of the “Master in Big Data Engineering (1st ed.)” of Politecnico di Milano
- [2016/2018] Scientific Director of the “Master in Analytics & Business Intelligence (3rd ed.)” of Politecnico di Milano

Teaching PhD Courses

- [2018/2019] *A Transdisciplinary view on Big Data* - Politecnico di Milano, PhD School (joint work with prof. Danilo Ardagna (DEIB), prof. Michela Arnaboldi (DIG), prof. Marco Brambilla (DEIB), prof. Paolo Ciuccarelli (DESIGN), Valeria Fedeli (DASTU), Fabio Pammolli (DIG), Piercesare Secchi (DMAT) and prof. Simone Vantini (DMAT))
- [2018/2019] *Stream and Complex Event Processing* - Politecnico di Milano, PhD School (joint work with prof. Gianpaolo Cugola (DEIB) and prof. Alessandro Margara (DEIB))
- [2017/2018] *Integration And Computational Analysis Of Genomic And Proteomic Information* - Politecnico di Milano, PhD School (joint with prof. Marco Masseroli and prof. Matteo Matteucci)
- [2016/2017] *A Multidisciplinary view on Big Data* - Politecnico di Milano, PhD School (joint work with prof. Danilo Ardagna (DEIB), prof. Michela Arnaboldi (DIG), prof. Paolo Ciuccarelli (DESIGN), and prof. Simone Vantini (MAT))
- [2015/2016] *Integration And Computational Analysis Of Genomic And Proteomic Information* - Politecnico di Milano, PhD School (joint with prof. Marco Masseroli and prof. Matteo Matteucci)
- [2014/2015] *A Multidisciplinary view on Big Data* - Politecnico di Milano, PhD School (joint work with prof. Danilo Ardagna, prof. Cinzia Cappiello, prof. Paolo Ciuccarelli, prof. Paolo Cremonesi, prof. Elisabetta Di Nitto, and prof. Letizia Tanca)
- [2012/2015] *Stream and Complex Event Processing* - Politecnico di Milano, PhD School (joint work with prof. Gianpaolo Cugola)
- [2013/2014] *Integration And Computational Analysis Of Genomic And Proteomic Information* - Politecnico di Milano, PhD School (joint work with prof. Marco Masseroli and prof. Matteo Matteucci)

Teaching MSc and BSc Courses

- [2008/2019] *Digital Project Management* (formerly, *Planning and Managing Software Project*) – Politecnico di Milano, School of Industrial and Information Engineering, Master of Science in Information Engineering (former V Facoltà di Ingegneria, Laurea in Ingegneria Informatica)
- [2016/2019] *Web Science* – Politecnico di Milano, School of Industrial and Information Engineering, Master of Science in Information Engineering (former V Facoltà di Ingegneria, Laurea in Ingegneria Informatica) joint work with prof. Marco Brambilla.
- [2015/2016] *Interoperability and Semantic Technologies* – Politecnico di Milano, School of Industrial

and Information Engineering, Master of Science in Information Engineering (former V Facoltà di Ingegneria, Laurea in Ingegneria Informatica)

- [2006/2009] *Ingegneria della Conoscenza* - Università degli Studi dell'Insubria Varese, Laurea Specialistica in Scienze e Tecniche della Comunicazione, Facoltà di Scienze Matematiche, Fisiche e Naturali
- [2004/2007] *Argomenti Avanzati di Sistemi Informativi A* – Politecnico di Milano, V Facoltà di Ingegneria, Laurea in Ingegneria Informatica

Teaching Assistant

- [2016/2018] 20 hours about *concurrency control*, *xQuery*, *Streaming DB*, and *NoSQL in database 2* – Politecnico di Milano, School of Industrial and Information Engineering, Master of Science in Information Engineering – taught by prof. Sara Comai
- [2011/2019] 20 hours per year about *Interoperability*, *HL7*, *RIM*, *CDA*, *RDF*, *OWL*, *SPARQL*, *ontology-base data access in ICT for Health Care and Life Science* – School of Industrial and Information Engineering, Master of Science in Information Engineering and Master of Science in Biomedical Engineering – taught by prof. Marco Masseroli
- [2004/2005] 4 hours of *Semantic Web and Semantic Web Services* in *Argomenti Avanzati di Sistemi Informativi A* – Politecnico di Milano, Facoltà di Ingegneria dell'Informazione, Laurea di secondo livello in Ingegneria Informatica
- [2003/2005] 20 hours per year about *SQL and XML in Informatica per l'ambiente e il territorio* – Politecnico di Milano, Facoltà di Ingegneria Civile Ambientale e Territoriale, Corso di Laurea Specialistica in Ingegneria per l'Ambiente e il Territorio
- [2001/2003] 20 hours per year about *SQL and XML in Fondamenti di Informatica II*, Politecnico di Milano, Facoltà di Ingegneria Civile Ambientale e Territoriale, Corso di Laurea Specialistica in Ingegneria per l'Ambiente e il Territorio

Tutorials

- 2019-06-25 An Outlook to Declarative Languages for Big Steaming Data at DEBS 2019 – half-day tutorial jointly presented with Riccardo Tommasini, Sherif Sakr and Marco Balduini
<http://streaminglangs.io/events/debs19.html>
- 2019-06-02 Continuous Analytics of Linked Data Streams at ESWC 2019 – half-day tutorial jointly presented with Jean-Paul Calbimonte, Riccardo Tommasini, Robin Keskisärkkä, and Eva Blomqvist.
<http://streamreasoning.org/tutorial-eswc19>
- 2018-05-13 Continuous Analytics of Web Streams at The Web Conf 2019 – half-day tutorial jointly presented with Jean-Paul Calbimonte, Riccardo Tommasini, and Albert Biffet.
<http://streamreasoning.org/events/tutorial-www19>
- 2018-10-28 Stream Reasoning - Incremental Reasoning Upon Rapidly Changing Information at KR 2018 - half-day tutorial jointly presented with Fredrik Heintz (Linköping University)
<http://streamreasoning.org/events/sr2018>

- 2018-09-24 Engineering of Web Stream Processing Applications at the 14th Reasoning Web Summer School - half-day tutorial
<http://streamreasoning.org/events/wasp-rw-2018>
- 2018-06-05 Engineering of Web Stream Processing Applications at ICWE 2018 - half-day tutorial jointly presented with Riccardo Tommasini (Politenico di Milano), Andrea Mauri (TU-Delft) and Marco Balduini (Politenico di Milano).
<http://streamreasoning.org/events/wasp-icwe-2018>
- 2017-10-21 How to Build a Stream Reasoning Application (StreamApp) at ISWC 2017 – full-day event jointly presented with Daniele Dell’Aglio (Department of Informatics, University of Zurich), Thu Le-Pham (INSIGHT Centre for Data Analytics, NUI Galway), Alessandra Mileo, (INSIGHT Centre for Data Analytics, Dublin City University), and Riccardo Tommasini (Dipartimento di Elettronica, Informatica e Bioingegneria, Politecnico di Milano)
<http://streamreasoning.org/events/streamapp2017>
- 2016-10-17 *Tutorial on RDF Stream Processing* at ISWC 2016 - full-day event jointly presented with Muhammad Intizar Ali (Insight Centre for Data Analytics), Daniele Dell’Aglio (Politenico di Milano), and Jean-Paul Calbimonte (École Polytechnique Fédérale de Lausanne)
<http://streamreasoning.org/events/rsp2016>
- 2016-06-20 *Stream Reasoning: Managing Velocity and Variety in Big Data* - full-day event jointly presented with Daniele Dell’Aglio (Politenico di Milano) and Alessandro Margara (Politecnico di Milano) at the 10th ACM International Conference on Distributed and Event-Based Systems 2016.
<http://streamreasoning.org/events/srdebs2016>
- 2015-10-11 *Stream Reasoning for Linked Data* – full-day event jointly presented with Muhammad Intizar Ali (Insight Centre for Data Analytics), Jean-Paul Calbimonte (École Polytechnique Fédérale de Lausanne), Daniele Dell’Aglio (Politecnico di Milano) Alessandra Mileo (Insight Centre for Data Analytics) at International Semantic Web Conference 2015, Bethlehem, Pennsylvania, USA
<http://streamreasoning.org/events/sr4ld2015>
- 2015-10-11 *Semantics Approach to Big Data and Event Processing* – three days event jointly presented with prof. Amit Sheth (knoesis Lab – Wright State University), Pramod Anantharam (knoesis Lab – Wright State University), Riccardo Tommasini (Politecnico di Milano) and Pavan Kapanipathi (knoesis Lab – Wright State University), Dayton, Ohio, USA
<http://wiki.knoesis.org/index.php/BigDataTutorial>
- 2015-06-26 Stream Reasoning Tutorial – two day tutorial on Stream Reasoning for Poznań University of Economic Master Students, Poznań, Poland
<http://emanueledellavalle.org/Teaching/srt2015.html>

- 2014-10-19 *Stream Reasoning for Linked Data* – full-day event jointly presented with prof. Oscar Corcho, PhD Jean-Paul Calbimonte, Daniele Dell’Aglia and Marco Balduini at International Semantic Web Conference 2015, Riva del Garda, Italy
<http://streamreasoning.org/events/sr4ld2014>
- 2013-10-21 *Stream Reasoning For Linked Data* – full-day event jointly presented with prof. Oscar Corcho, prof. Jeff Z. Pan, PhD Jean-Paul Calbimonte, Daniele Dell’Aglia and Marco Balduini at International Semantic Web Conference 2013, Sydney, Australia
<http://streamreasoning.org/sr4ld2013>
- 2011-06-09 *Stream Reasoning For Linked Data* – half-day event jointly presented with prof. J.Z. Pan at Semantic Technology Conference (SemTech) 2011, San Francisco, CA, USA
- 2011-05-31 *Stream Reasoning For Linked Data* – full-day event jointly presented with prof. J.Z. Pan at Extended Semantic Web Conference (ESWC) 2011, Heraklion, Creta, Grecia
<http://streamreasoning.org/Past-Events/sr4ld2011>
- 2010-11-13 *4th Large Knowledge Collider Early Adopters Tutorial* – full-day event jointly presented with LarKC consortium at r Beijing University of Technology, Beijing, China
<http://www.larkc.eu/early-adopters/4th-early-adopters-tutor>
- 2010-07-05 *Realizing a Semantic Web Application* – half-day event at International Web Engineering Conference (ICWE) 2010, Vienna, Austria
<http://swa.cefruel.it/Teaching/RSWA2008>
- 2010-05-30 *3rd Large Knowledge Collider Early Adopters Tutorial* – full-day event jointly presented with LarKC consortium at Extended Semantic Web Conference (ESWC) 2010, Heraklion, Creta, Grecia
<http://www.larkc.eu/early-adopters/3rd-early-adopters-tutorial/>
- 2009-10-25 *2nd Large Knowledge Collider Early Adopters Tutorial* – full-day event jointly presented with LarKC consortium at International Semantic Web Conference (ISWC) 2009, Washington, DC, USA
<http://www.larkc.eu/early-adopters/2nd-early-adopters-tutorial/>
- 2008-10-26 *Realizing a Semantic Web Application* – half-day event at ISWC 2008, Karlsruhe, Germany
http://videolectures.net/iswc08_dellaValle_rswa/
- 2008-05-07 *Semantic Web Application Development* – half-day event at Business Information Systems (BIS) 2008
- 2007-04-26 *Applied Semantics* - half-day event at Business Information Systems (BIS) 2007
- 2006-12-18 *An overview of Semantic Web Service at Semantic Web Applications and Perspectives (SWAP) 2006*, Pisa, Italy
- 2005-12-02 *An overview of Semantic Web Services* at Università di Milano Bicocca, Milano, Italy
- 2005-11-04 *An overview of Semantic Web* at Università di Milano Bicocca, Milano, Italy

Invited Talks and Key Notes

- 2018-09-26 *Engineering of Web Stream Processing Applications*. 14th Reasoning Web Summer School, Luxembourg
- 2018-02-27 *Ten years of Stream Reasoning. Now what?* Huawei Research, Munich
- 2018-02-26 *Ten years of Stream Reasoning. Now what?* AGTInternational, Frankfurt
- 2017-06-15 *Ten years of Stream Reasoning. Now what?* University of Oslo, Norway
- 2016-10-28 *Using Big Data and Stream Reasoning for everyday life monitoring*. Como, Italy
- 2016-07-20 *Listening to the pulse of our cities with Stream Reasoning (and few more technologies)*, 12th Semantic Web Summer School, Bertinoro, Italy
- 2015-11-24 *Stream Reasoning: mastering the velocity and the variety dimensions of Big Data at once*, Fondazione Bruno Kessler, Trento, Italy
- 2015-11-10 *Stream Reasoning: mastering the velocity and the variety dimensions of Big Data at once*, TU Wien, Wien, Austria
- 2015-11-03 *Stream Reasoning: mastering the velocity and the variety dimensions of Big Data at once*, University of Oslo, Oslo, Norway
- 2015-06-22 *Listening to the pulse of our cities fusing Social Media Streams and Call Data Records*, BIS 2015, Poznań, Poland
- 2015-06-21 *Stream Reasoning*, SIEMENS, Munich, Germany
- 2013-11-22 *A Big Data Infrastructure to sense the pulse of the city in real-time* at IBM, Segrate, Italy
- 2013-10-21 *Listening to the pulse of our cities during City Scale Events* at DeRiVE 2013 Workshop collocated with ISWC 2013, Sydney, Australia
- 2012-11-06 *Order Matters! Harnessing a World of Orderings for Reasoning over Massive Data* at University of Trento, Italy
- 2012-09-25 *Challenges, Approaches, and Solutions in Stream Reasoning* at Semantic Days, Stavanger, Norway
- 2012-02-27 *BOTTARI: How to offer innovative services listening to the Social Media* at Senso Comune, University of Trento, Trento, Italy
- 2011-07-15 *Stream Reasoning* at Asian Semanti Web School 2011, University of Incheon, Seoul, Corea
- 2011-01-18 *Stream Reasoning, where we got so far* at Oxford University, UK
- 2009-03-02 *Building Mobile Data Mashups Using LarKC* at NTT-DoCoMo Labs, Munich, Germany
- 2008-02-19 *Le sfide per i CIO delle Enterprise 2.0* at *Virtualisation & Enterprise 2.0* organized by IDC, Milano, Italy
- 2007-11-15 *Web 2.0: le sfide per le moderne dot-com* at *WEB 2.0 – Tecnologie per il business o fenomeno sociale?* organized by Guide Italy (<http://www.guideitalia.org/>), Milano, Italy
- 2007-11-02 *SWE-ET Model Driven Semantic Web Application Development* at Almaden IBM Research Labs, CA, USA
- 2007-10-15 *SOA e Web 2.0* at *business Integration Forum 2007* organized by IIR, Milano, Italy
- 2007-03-15 *Future and perspectives for Service Oriented Architecture* at *Service Oriented*

- Architecture (SOA): dalla sperimentazione all'implementazione strategica* organized by Business International, Milano, Italy
- 2006-11-29 *SWE-ET: the Italian solution to the Semantic Web Service Challenge a The Semantic Dimension of Information Tecnology* organized by Fondazione IBM, Rome, Italy
- 2006-10-27 *Making already existing IT architecture flexible: from fragmented application to controllable business processes* at *Business Integration Forum 2006* organized by IIR
- 2006-07-05 *SOA: between myth and reality, the value of experience* at *SOA Day* organized by Ferrovie dello Stato, Rome, Italy
- 2006-06-21 *The market of Service Oriented Architecture: future and perspectives* at *Service Oriented Architecture (SOA): dalla sperimentazione all'implementazione strategica* organized by Business International, Roma, Italy
- 2006-03-15 *SOA: what is it? How it works? What's going on?* at *Convegno SOA* organized by IDG, Milan, Italy
- 2006-01-26 *Basta Cercare, Vogliamo Trovare!* at *IDC conference on Content Management Systems*, Milan, Italy
- 2005-04-10 *Evoluzione dei Web Services per l'interoperabilità: approcci a supporto della dinamicità e flessibilità nell'integrazione di infrastrutture IT* at *IDC conference on Web Services and Enterprise Application Integration*, Milan, Italy
- 2005-01-27 *Approcci innovativi allo sviluppo di portali: Semantic Web, accessibilità e multimodalità* at *IDC conference on Content Management Systems*, Milan, Italy
- 2004-02-22 *A Semantic approach to Interoperability* at *Perspectives in eGovernment and eTransaction for Innovation in Europe*, Milano, Italy
- 2002-05-15 *Strumenti esperti per la rappresentazione della conoscenza* at *The Art of Knowledge Management* organized by OpenText, Getronics and Cisco Systems, Milan, Italy

Professional Activities

Board of International Journals

- 2014/today member of the editorial board of *Journal of Web Semantics* (<http://www.journals.elsevier.com/journal-of-web-semantics/>)
- 2011/2017 member of the editorial board of *International Journal On Semantic Web and Information Systems* (<http://www.ijswis.org/>)

Conference Organization

- 2019 Senior PC member for the *International Semantic Web Conference 2019 (ISWC 2019)*
- 2019 Chair of the *Velocity on the Web Track* of the *Extended Semantic Web Conference 2019 (ESWC 2019)*
- 2018 Chair of the *Benchmarking and Empirical Evaluations Track* of the *Extended Semantic Web Conference 2018 (ESWC 2018)*
- 2017 Chair of the *Mobile Web, Sensors and Semantic Streams Track* of the *Extended Semantic Web Conference 2017 (ESWC 2017)*

2011 Chair of the Reasoning Track of the Extended Semantic Web Conference 2011 (ESWC 2011)

Workshop Organization

- 2019 *Stream Reasoning 2019* (SR2019) annual reunion of the Stream Reasoning community jointly organized with Fredrik Heintz (Linköping University)
- 2019 *Emerging trends on Web Velocity and the Web of Things* at The Web Conf 2019
- 2017 *Web Stream Processing 2017* (WSR2017) co-located with International Semantic Web Conference 2017 (ISWC 2017)
- 2016 *Stream Reasoning 2016* (SR2016) co-located with International Semantic Web Conference 2016 (ISWC 2016)
- 2015 *Ordering and Reasoning 2015* (OrdRing 2015) co-located with International Semantic Web Conference 2015 (ISWC 2015)
- 2014 *Ordering and Reasoning 2014* (OrdRing 2014) co-located with International Semantic Web Conference 2014 (ISWC 2014)
- 2013 *Ordering and Reasoning 2013* (OrdRing 2013) co-located with International Semantic Web Conference 2013 (ISWC 2013)
- 2011 *Ordering and Reasoning 2011* (OrdRing 2011) co-located with International Semantic Web Conference 2011 (ISWC 2011)
- 2010 *New Form of Reasoning 2010* (NeFoRS 2010) co-located with Extended Semantic Web Conference 2010 (ESWC 2010)
- 2009 *Stream Reasoning 2009* (SR 2009) co-located with Extended Semantic Web Conference 2009 (ESWC 2009)
- 2008 International Workshop on *Evaluation of Ontology-based Tools and the Semantic Web Service Challenge* (EON-SWSC-2008) co-located with European Semantic Web Conference 2008 (ESWC 2009)

Standardization activities

- 8-2013/12-2016 Proposer and active member of W3C RDF Stream Processing Community Group
<http://www.w3.org/community/rsp/>
- 11-2007/12-2008 Invited Expert al W3C SWS Challenge Testbed Incubator
<http://www.w3.org/2005/Incubator/swsc/>
- 10-2005/4-2009 Active member of Semantic Execution Environment TC at OASIS
<https://www.oasis-open.org/committees/semantic-ex/>
- 6-2005/6-2008 Contributor to W3C Semantic Web Health Care and Life Science WG
- 6-2004/5-2008 Active member of WSMO WG (Web Service Modeling Ontology)
<http://www.wsmo.org/>

Nominations, Awards and Prizes

- 6-2019 his paper on *D2IA: Stream Analytics on User-Defined Event Intervals* won CAiSE'19 **best paper award**.
- 6-2017 his paper on *Incremental Reasoning on Streams and Rich Background Knowledge* was **nominated** for the **Best Paper 7 years** award of ESWC 2017
- 10-2016 his paper on *CitySensing: Fusing City Data for Visual Storytelling* wins the **best paper** award for IEEE MM 2016
- 10-2015 he is awarded the *ASP fellowship* as **best tutor**
- 6-2014 *Augmented Participation to Live Events through Social Network Content Enrichment* wins the *AI mashup Challenge 2014*
- 9-2013 Emanuele Della Valle wins the **IBM Faculty Award 2013** for the research program on *City Data Fusion*
- 5-2013 *TwindexFuorisalone: Social Listening of Milano Design Week* wins the *AI mashup Challenge 2013*
- 9-2011 *Bottari*, an App to deliver personalized and location-based recommendations by continuous analysis of social media, wins the *Semantic Web Challenge 2011*
- 6-2011 *Traffic LarKC* wins the *AI mashup Challenge 2011*
- 6-2008 *Squiggle* Business Plan wins the second prize of *StartCup Milano Lombardia 2008* and it is accepted among the finalist of Premio Nazionale Innovazione
- 6- 2007 *Enabling the European Patient Summary Through Triplespaces* wins *Best Paper Award* at Computer-Based Medical Systems
- 2- 2007 Emanuele Della Valle wins *CEFRIEL's Excellence Award 2007* for having started up and brought to internal level CEFRIEL's Semantic Web Practice.
- 11- 2006 *Flexible Specification of Semantic Services using Web Engineering Methods and Tools* wins the *Best Paper Award* at Semantic Web and Software Engineering Workshop 2006 co-located con ISWC 2006
- 9- 2006 Emanuele Della Valle wins the **IBM Faculty Award 2006** for the research on Model Driven Semantic Web Application Development (SWE-ET)
- 6-2006 SWE-ET is evaluated as “the most complete solution presented at Phase-II of Semantic Web Service Challenge”

Research Projects

- 01/2019/12-2019 **Data Science Blended Course for non-IT Professionals** is an activity, funded by EIT Digital, which aims at delivering a blended course consisting in a mooc as well as a face-to-face event to train data-savvy manager.
Emanuele Della Valle jointly developed this project with prof. Marco Brambilla.
- 01/2018/12-2018 **Welcome** is the continuation of the CrowdInsight activity, funded by the EIT Digital, and led by TIM.
Emanuele Della Valle is one of the promoters of the idea and brings its expertise in Big Data Analytics.

- 01/2017/12-2017 **CrowdInsight** is an activity, funded by the EIT Digital, and led by TIM, which aims at understanding people dynamics in urban spaces. It actively *monitors urban environments* detecting the composition, dynamics and motivations of crowds. It provides data analytics and actionable insights to support *decision-making and planning* among administrations and businesses.
- Emanuele Della Valle is one of the promoters of the idea and brings its expertise in Big Data Analytics.
- 01/2017/12-2017 **BeCamGreen activity** is an activity, funded by the EIT Digital, and led by INDRA, which aims fostering the adoption of high occupancy lanes.
- Emanuele Della Valle brings its expertise in real-time predictive Big Data Analytics to support INDRA in forecasting traffic and enforcing policies on high occupancy lanes.
- 01-2015/12-2016 **Personal Social Media Analytics within the HII Future Cloud activity** is a task, funded by the EIT Digital, which aims at providing personal social media analytics services. The goal is to offer this type of service within a Personal Data Store under development in Telecom Italia.
- Emanuele Della Valle is the *principal investigator* of the task.
- 01-2015/12-2015 **CitySensing installation for EXPO within the 3sixty activity** is a task, funded by the ICT Labs of the European Institute of Innovation and Technologies (EIT), which aims deploying the CitySensing installation on 10 eWalls for the full duration of EXPO 2015 in Milano. The project is a joint effort with Telecom Italia and the Density Design Lab led by prof. Ciuccarelli.
- Emanuele Della Valle is the *principal investigator* of the task.
- 09-2013/12-2014 **City Data Fusion for Event Management** is an activity, funded by the ICT Labs of the European Institute of Innovation and Technologies (EIT), which aims at enhancing the ability to feel the pulse of our cities to deliver innovative services. To this end, we started collecting in real-time data streams of different types ranging from social networks – specifically, Twitter, Instagram and Foursquare – to Mobile Phone Networks and sensors such as Traffic Flow, Weather and Pollution Sensors. We are also exploring pro-active crowdsourcing techniques, tailored to incentives applicable in urban environment and to urban life styles, to cleanse and semantically enrich those data streams. Last, but not least, we are experimenting with innovative technologies, methodologies and systems for data fusion, analysis and visualization to magnify the value of those data streams.
- Emanuele Della Valle is the *principal investigator* of the activity.
- 10-2010/9-2014 **Urban Games with a Purpose for PlanetData.** PlanetData aimed to establish a sustainable European community of researchers that supports organizations in exposing their data in new and useful ways. PlanetData pushed forward the state-of-the-art in large-scale data management and its application to the creation of useful, open data sets. This was motivated by the increasing reliance of business on large public data; the uptake of open data principles in many vertical sectors; and the need of research communities to make sense out of petabytes of scientific data,

to describe and to expose this data in ways that encourage and enable collaboration. Emanuele Della Valle contributed with his research on *crowdsourcing* techniques, whose incentives are tailored to urban lifestyle and needs, to the *Urban Games work package*.

10-2009/11-2013 **Search Computing** (SeCo) is a project funded by the European Research Council (ERC), responding to the 2008 Call for "IDEAS Advanced Grants", a program dedicated to the support of investigation-driven frontier research. Search computing focuses on building the answers to complex search queries like "Where can I attend an interesting conference in my field close to a sunny beach?" by interacting with a constellation of cooperating search services, using ranking and joining of results as the dominant factors for service composition.

Emanuele Della Valle participated to the development of SeCo concept and lead the group dedicated to Technology and Business Watch

4-2008/10-2011 The **Large Knowledge Collider** (LarKC) aim was to develop the Large Knowledge Collider (LarKC, for short, pronounced "lark"), a platform for massive distributed incomplete reasoning that will remove the scalability barriers of currently existing reasoning systems for the Semantic Web. This was achieved by: *a*) enriching the current logic-based Semantic Web reasoning with methods from information retrieval, machine learning, information theory, databases, and probabilistic reasoning, *b*) employing cognitively inspired approaches and techniques such as spreading activation, focus of attention, reinforcement, relevance reasoning, and bounded rationality; and *c*) building a distributed reasoning platform and realizing it both on a high-performance computing cluster and via "computing at home".

Emanuele Della Valle was a *member of the proposal writing team*. His major contributions to the project are the *Stream Reasoning* concept, its embodiment in *C-SPARQL* and the lead of the *Urban Computing* use case.

1-2008/12-2009 **Service-Finder** developed a platform for service discovery in which Web Services are embedded in a Web 2.0 environment. The project addresses the problem of utilising the Web Service technology for a wider audience by realising a comprehensive framework for Discovery. The approach is to develop novel means of obtaining the underlying semantic models for discovery, by analysing available Web content, leveraging direct and indirect user feedback on the extracted data and exploiting context information. The result will be a Search Engine that enables users to find up-to-date information on available Web Services, similarly to current search engines for content pages.

Emanuele Della Valle was the *principal investigator* of the project.

1-2006/6-2008 **Single European Employment Market-Place** (SEEMP) aimed at designing and implementing in a prototypal way an interoperability architecture for public e-Employment services which encompasses cross-governmental business and decisional processes, interoperability and reconciliation of local professional profiles and taxonomies, semantically enabled web services for distributed knowledge access and sharing.

Emanuele Della Valle was *member of the proposal writing*, he acted as *Technical and Scientific Manger* during the project and contributed to the project with his research on *Web Service Discovery*.

4-2006/6-2008 **Triple Space Communication** (TripCom) goal was the development of a highly scalable, semantically enhanced communication infrastructure that is the result of the integration of Tuple Space, Semantic Web (triple), and Web service technologies.

Emanuele Della Valle was *member of the proposal writing*, lead the *eHealth use case* and was a member of the exploitation board of the project.

4-2006/6-2008 **Semantics Utilised for Process management within and between EnteRprises** (SUPER) aimed to make a quantum leap with regard to efficiency and effectiveness in modelling and managing of business processes. It looked to enable companies to use information technology more efficiently and to improve the alignment between IT and business. In particular SUPER worked on enabling companies to: a) overcome the gap between business and IT, b) implement new business processes more quickly and efficiently, and c) make business processes accessible to reasoning and (advanced) querying.

Emanuele Della Valle worked on the *project show cases* and participated to the *standardization* work of the Semantic Execution Environment at OASIS.

7-2006/6-2008 **Networked Peers for e-business** (NeP4B) aimed to contribute innovative ICTs solutions for SMEs, by developing an advanced technological infrastructure to enable companies of any nature, size and geographic location to search for partners, exchange data, negotiate and collaborate without limitations and constraints. The infrastructure was based on independent and interoperable semantic peers who behave as nodes of a virtual network. With these results the NeP4B project intended to provide a substantial contribute to the Single European Electronic Market (SEEM) concept, which represents one of the core aspects of the European Information Society 2010 initiative.

Emanuele Della Valle *lead the user requirement work package* and contributed to the project with his research on *Semantic Web Service Discovery*.

1-2004/6-2007 **COCOON** was an Integrated Project aimed at supporting health care professionals in reducing risk management in their daily practices by building knowledge driven and dynamically adaptive networked communities within European healthcare systems. The main objective of COCOON project is to support knowledge driven collaborative practices in Networks of Healthcare Professionals in order to minimise medical errors in diagnosis and treatment. On this basis the main COCOON project research directions are twofold: on one side the socio-economics research on health care risk management and the related business model for reducing risk by enabling the COCOON technologies; and on the other side the technological research that wants to deal an innovative tool-set for risk management.

Emanuele Della Valle was the *deputy Technical Manger* of the project and

contributed to the project with his research on *Semantic Portals* and *Web Service Discovery*.

7-2003/6-2005 **NomadicMedia** is an ITEA project that developed solutions to allow consumers to enjoy multimedia content and employ interactive services at the times and in the places they prefer, using devices that best suit their circumstances.

Emanuele Della Valle contribute to the project with his research on *Web Service Discovery*.

11-2000/10-2002 **Octane24** aimed to deploy and validate an Open Contracting Service (OCS) to establish electronic contracts due to the needs of European SMEs affected by huge costs for building new European and global business relationships. OCTANE provided a solution by leveraging unproven new ICT-technology into user-friendly applications, and developing business models for encouraging access to low cost and reliable business information by improving the "time to contract". The solution consisted of three different clustered components: - the OCS software which supports contract composition and negotiation, - the Electronic Notary for certification and verification, - the Business Information Services (BIS) to support SMEs in evaluating potential contractors.

Emanuele Della Valle designed and developed the *electronic notary* using a workflow engine and XML signature.

Referee

2019-06 – IEEE – Access

2019-06 – Springer - Social Network Analysis and Mining

2019-05 – IOS press – Semantic Web Journal

2018-06 – IEEE – Access

2018-03 – Springer – JWS (2 papers)

2017-11 – Springer – JWS

2017-10 – Elsevier – JLAMP

2016-10 – Springer – JWS (2 papers)

2016-08 – Elsevier – Journal of Logical and Algebraic Methods in Programming (JLAMP)

2016-07 – IOS press – Semantic Web Journal

2016-05 – ACM - TOIT

2016-03 – Springer – Journal of Data Semantics

2016-02 – Springer - Social Network Analysis and Mining

2016-01 – Elsevier – JWS

2015-12 – Elsevier – JWS (2 papers)

2015-12 – Springer – Journal of Data Semantics

2015-11 – Elsevier – JWS

2015-09 – Elsevier - JWS

2015-08 – Springer – Journal of Data Semantics
2015-06 – Elsevier - JWS
2015-05 – IOS press – Semantic Web Journal
2015-05 – ACM - TOIT
2015-03 – IOS press – Semantic Web Journal
2014-03 – Elsevier - JWS
2014-01 – Elsevier - JPDC
2013-11 – ACM - Sigmod Records
2013-09 – Springer - Knowledge and Information Systems
2013-09 - Elsevier - Journal of Web Semantics
2013-08 - Elsevier - Journal of Web Semantics
2013-05 – IOS press – Semantic Web Journal
2013-03 - Elsevier - Journal of Web Semantics
2013-01 - IGI Global - International Journal On Semantic Web and Information Systems
2012-12 – ACM - Transactions on the Web (TWEB)
2012-12 – IOS press – Semantic Web Journal
2012-12 – ACM/Springer – VLDB Journal
2012-08 – ACM - Transactions on the Web
2012-08 – IEEE Software
2012-06 - IOS press – Semantic Web Journal
2012-06 – Springer – AI Mashup Challenge Book
2012-06 – Springer – Search Computing Book
2012-06 - IOS press – Semantic Web Journal
2012-06 - Rinton Press - Journal of Web Engineering
2012-04 - Elsevier - Journal of Web Semantics
2012-03 - Elsevier - Journal of Web Semantics
2012-01 – IGI Global - International Journal of Information Technology and Web
2012-01- ACM - Transactions on the Web
2012-01 - IEEE Internet Computing
2011-05 – IGI Global - International Journal On Semantic Web and Information Systems
2011-03 – Springer - Knowledge and Information Systems
2011-01 - Elsevier - Journal of Web Semantics
2011-01 – Elsevier - Data & Knowledge Engineering
2010-12 – IEEE - Transactions on Systems, Man, and Cybernetics
2010-11 - Elsevier - Journal of Web Semantics
2010-10 - Elsevier - Journal of Web Semantics
2010-09 – Wiley - Software: Practice and Experience

2010-08 – IEEE - Transactions on Systems, Man, and Cybernetics
2010-07 - Elsevier - Engineering Applications of Artificial Intelligence
2010-07 – Elsevier - Journal of Web Semantics
2010-07 – IEEE - Transactions on Software Engineering
2009-03 - IEEE - Internet Computing
2009-12 - Elsevier - Information Systems
2009-12 - IEEE - Internet Computing
2009-09 - ACM - Transactions on the Web

Program Committees Membership

2019-05 – ISWC 2019
2018-08 – EKAW 2018
2018-07 – Semantics 2018
2018-05 – ISWC 2018
2018-04 – DEBS 2018
2018-01 – ICWE 2018
2017-11 – WWW 2018
2017-06 – ISWC 2017
2016-11 – WWW 2017
2016-08 – EKAW 2016
2016-06 – ISWC 2016
2016-05 – RuleML 2016
2016-03 – WebScience 2016
2016-01 – ICWE 2016
2016-01 – ESWC 2016
2015-05 – ISWC 2015
2015-01 – ESWC 2015
2014-08 – EKAW 2014
2014-06 – RuleML Challenge 2014
2014-03 – CrowdUI 2014
2014-01 – ESWC 2014
2013-07 – ODBASE 2013
2013-06 – AI mashup Challenge post Proceedings
2013-06 - RuleML-challenge
2013-04 – AI mashup Challenge 2013
2013-02 – ESWC 2013
2013-01 – WWW 2013

2012-11- SWESE 2012
2012-10 – EAAI 2012
2012-06 – ODBASE 2012
2012-06 - Conference on Business Process and Services Computing
2012-03 – ESWC 2012 Demo
2012-04 – ICWS 2012
2012-02 – ESWC 2012
2012-03 – LDOW 2012
2011-05 - AI mashup Challenge 2011
2011-07 – DATAVIEW 2011
2011-07 – Workshop on Emerging Web Services Technology 2011
2011-08 – ODBASE 2011
2011-08 – SDOW 2011
2011-08 – SWESE 2011
2011-11 – AINA 2012
2011-12 – WWW 2012
2010-07 – Workshop on Emerging Web Services Technology 2010
2010-06 - Conference on Business Process and Services Computing
2009-07 – Workshop on Emerging Web Services Technology 2009
2009-01 - Workshop on Advances in Accessing Deep Web
2008-07 – Workshop on Emerging Web Services Technology 2008
2008-01 – Workshop on Advances in Accessing Deep Web

Evaluation of Research Project

2019-1 *ERC starting grant* evaluator
2017-11 *ERC starting grant* evaluator
2013-11 *Project Proposal Evaluator* for the PICO_LOD project funded by Provincia Autonoma di Trento
2013-09 *Project Proposal Evaluator* for research project funded by Austrian Science Foundation
2013-03 *Project Proposal Evaluator* for a PRIN project funded by MIUR
2012-06 *Project Proposal Evaluator* for Urban Life and Mobility projects funded by EIT ICT-labs

Evaluation of PhD students

2019-05 PhD defense of Le Thi Anh Thu Pham for National University of Ireland Galway
2019-02 PhD defense of Pieter Bonte for Ghent University, Belgium
2018-03 PhD defense of Rui Yan for the Rensselaer Polytechnic Institute, USA
2017-05 Licenciate thesis of Daniel de Leng for Linköping University, Sweden

Other activities

- 1-2012/12-2014 *National Action Line Leader* of Urban Life and Mobility for EIT ICT Labs
- 10-2007/10-2008 *Coordinator* of the Testbeds and Challenge Service for the Semantic Technology Institute International
- 4-2006/10-2008 *Project Manager* for evaluating the possibility to create a CEFRIEL spin-off to commercialize Squiggle (CEFRIEL's Semantic Search Engine)
- 6-2005/7-2008 *Program Manager* of CEFRIEL's Semantic Web Activities.

University Service

- 2018- member of the committee for the evaluation of international students for the degree in Engineering of Computing Systems of Politecnico di Milano - Milano Campus.
- 2008-2018 responsible for the Internalization activities (including ERASMUS and TIME students) of the degree in Engineering Of Computing Systems of Politecnico di Milano - Como Campus.

Student Supervision

PhD students (ongoing)

- Riccardo Tommasini: On Velocity on the Web (tentative title)
- Sivam Pasupathipillai: On Massive Online Anomaly Detection (tentative title)

PhD students (graduated)

- 2019-02 Marco Balduini: On The Continuous And Reactive Analysis Of A Variety Of Spatio-Temporal Data
- 2018-07 Shima Zahmatkesh: On Relevant Query Answering over Streaming and Distributed Data
- 2016-07 Daniele Dell'Aglio: On Unified Stream Reasoning

Master students (graduated)

- 2019-04 Scorsolini Philippe: An infrastructural view of cascading stream reasoning using micro-services
- 2019-04 Bernardo Alessio: Towards a benchmarking environment for streaming machine learning
- 2018-12 Scrocca Mario: Towards Observability with (RDF) Trace Streaming Processing
- 2018-10 Alasgarov Eldar: An experience in developing a scalable web application for reporting in real estate industry
- 2018-07 Abosedira Yehia Mohamed Ali Ahmed: Towards Streaming Data on the Web: Vocabularies, Catalogs and Applications
- 2017-04 Alessandro Donini: Una comparazione tra tecniche tradizionali e innovative di Data Visualization
- 2017-04 Blertan Libusha: Data Analytics of Milano Design Week 2016 Collected Using the Official Mobile App
- 2016-09 Farimah Fanaei: The power of time window in predicting hashtags while typing a tweet

- 2016-04 Marco Tagliabue: Lexicon-Based Domain-Agnostic Multilingual Sentiment Analytics as a Service
- 2015-04 Riccardo Tommasini: Heaven: supporting systematic comparative research of RDF stream processing engines
- 2014-10 Christian Marazzi, Andrea Mauri: Towards a tool set for social media analytics able to represent and anticipate the real world
- 2014-10 Luis Alberto Bonilla Leon: Implementing location based games with a purpose. The Urbanopoly Web case
- 2014-10 Soheil Behnam Roudsari, Kouros Sheykhvand: Land use identification using mobile phone data
- 2014-04 Claudio Caletti: Ontology matching enhanced with similarity measures for georeferenced datasets
- 2014-04 Gloria Re Calegari, Gioele Nasi: CSE LiVeTweet analyser : a system for generating links between Venues and Tweets during city scale events
- 2014-04 Sara Habil Amirkhiz: An experience on error awareness and recovery in an energy distribution data management system : design, implementation and verification
- 2013-12 Roberto Gualandris: WikiFinder : un game with a purpose per lo studio della popolarità di linked data
- 2013-10 Antonella Di Rienzo: Data Linking as a side effect of game playing
- 2013-10 Mona Naseri: Automating Processes in Clarity PPM by Gel Scripting
- 2013-10 Andrea Pozzetti and Lorenzo Onofrio: Un Centro Commerciale Naturale 2.0: un'esperienza su Como
- 2013-10 Shima Zahmatkesh: Towards A Top-K Sparql Query Benchmark Generator
- 2012-12 Sivakumar Ramachandran: GIS to virtual RDF graphs (G2R)
- 2012-12 Attilio Fiumano: Sviluppo di applicazioni mobile cross-platform con Apache Cordova: Il caso di Urbanopoly
- 2012-04 Federico Caimi: Ontology And Instance Matching For The Linked Open Data Cloud
- 2012-03 Stefano Fumeo and Simone Contessa: Linking and Improving Linked Urban Data with Games with a Purpose
- 2011-12 Dragan Lesic: Developing graphical user interface for LDA architecture
- 2011-08 Chris Dijkshoorn and Bas Groenewoud: Semantic Web Empowered City Trip Planning
- 2011-07 Marco Balduini and Mirko Bratomi: SLD4SM : un ambiente integrato per la gestione di Stream di Social Media tramite Linked Data
- 2011-03 Adil Nausherwan: Streaming Linked Data
- 2011-03 Geatano Niro: Punti di forza e debolezze nello sviluppo di applicazioni del Semantic Web
- 2011-03 Sara Magliacane: Towards A Rank-Aware Execution Of Top-K Sparql Queries
- 2011-12 ASP project supervision: The Social Computer for Milano and Torino (TSC@MITO)
- 2010-12 ASP project supervision: Urban Computing for Milano and Torino (UC@MITO)
- 2010-09 Hafiz Muhammad Qasim: Towards Treating GIS as Virtual RDF Graphs

- 2010-06 Marco Ragaldo: Traduzione automatica di interrogazioni Continuous-SPARQL su stream RDF in EPL e SPARQL
- 2010-04 Hadi-Choueiry: OpenStreetMap Recursive Street Extraction
- 2010-04 Catalina Mancas: An Empirical Study about the Impact of the Semantic Technologies upon the Software Development Lifecycle
- 2008-10 Daniele Dell’Aglione: Investigation on the convergence between Web 2.0 and Semantic Web
- 2008-7 Walter Corno: Intermediate Object-Oriented Layer to expose pre-existing Data Sources as SPARQL Endpoints
- 2006-6 Andrea Turati: PAGE: A Distributed Infrastructure for Fostering RDF-Based Interoperability

Innovation Projects

- 9-2018/11-2018 **Spark2Sparql and back** (buyer: Ricerca sul Sistema Energetico S.p.A.) design, develop, test and deploy two components that allows spark to read RDF data from SPARQL end-points and a federated SPARQL engine to query SparksSQL as a virtual RDF graph via Ontop.
- 9-2017/11-2017 **Smart Grid Data Analytics** (buyer: Ricerca sul Sistema Energetico S.p.A.) design, develop, test and deploy a Big Data Science solution to analyze and predict Smart Grid Data collected by multiple company that owns and manage energy distribution networks.
- 1-2015/6-2015 **Oggi in Vetrina** (buyer: Como Municipality) developed of a multi-platform mobile app that extends the offer of ShopInComo. The new app informs tourists and citizens of offers launched by Como shops. If a user is interest in an offer, the app allows to open the ShopInComo app to learn more about the shop that offers it.
- 1-2015/6-2015 **CoVadis** (buyer: Como Municipality) developed of a multi-platform mobile app and to inform drivers of the availability of parking lots in Como parking silos and start a GPS navigator on the phone to guide them. The app alerts the driver when the chosen parking silo is running out of lots, so that the driver may decide to go to another parking silo.
- 1-2014/6-2014 **ShopInComo** (buyer: Como Municipality) developed a multi-platform mobile app and a Web site¹ to inform tourists and citizens about the shops available in Como. The app is available on the iOS², Android³ and Windows phone market.
- 5-2013/12-2014 **CitySensing** (buyer: Telecom Italia) developed a post-hoc dashboard for visually analysing city scale events by fusing mobile telecommunication and social media data streams. Emanuele Della Valle applied his research results on social media analytics using the Streaming Linked Data framework and supervised the service side development of the dashboard.

¹ <http://shopincomo.comune.como.it/>

² <https://itunes.apple.com/us/app/shopincomo/id886182483?mt=8>

³ <https://play.google.com/store/apps/developer?id=shopincomo>

- 10-2011/3-2012 **UrbanMatch** (buyer: SIEMENS) a Game with a Purpose to experiment with crowdsourcing techniques whose incentives are tailored to urban lifestyles and needs. Emanuele Della Valle conceived the Urban Match game and formalized the problem as a record linkage problem.
- 11-2005/2–2006 **Squiggle Ski** (buyer: Comitato Olimpico Torino 2006) a semantic search engine of athletes images (<http://squiggle.cefriel.it/ski/>). Emanuele Della Valle acted as Project Manager.
- 6-2005/1-2006 **ZappoTV goes Semantics** (buye: Alcatel) the design and implementation of the semantic extension of a multimedia search engine. Emanuele Della Valle acted as Project Manager and designed the core of Squiggle (CEFRIEL's Semantic Search engine).
- 3-2004/5-2004 **definizione dei Livelli di Servizio per email regionale in gestione a Lombardia Informatica s.p.a** (buyer: Lombardia Informatica s.p.a.) Emanuele Della Valle acted as Project Manager and contributor.
- 10-2003/4-2004 **definizione dei Livelli di Servizio per Nuova Anagrafe regionale in gestione a Lombardia Informatica s.p.a.** (buyer: Lombardia Informatica s.p.a.) Emanuele Della Valle acted as Project Manager and contributor.
- 7-2003/10-2003 **studio di visione strategica del Sistema Informativo Agricolo Regione Lombardia** (buyer: Regione Lombardia) Emanuele Della Valle acted as Project Manager and contributor.
- 3-2003/7-2003 **definizione di una metodologia per i Livelli di Servizio per gli applicativi di Regione Lombardia in gestione a Lombardia Informatica s.p.a.** (buyer: Lombardia Informatica s.p.a.) Emanuele Della Valle acted as Project Manager and contributor.
- 9-2002/1-2003 **Studio di fattibilità per la realizzazione di un sistema documentale per il Ministero dell'Economia e delle Finanze.** (buyer: SOGEI). Emanuele was the major contributor to the feasibility study.
- 1-2002/6-2002 **Regione Lombardia intranet portal** (buyer: Regione Lombardia). Emanuele Della Valle acted as Project Manager, solution architect and developer.
- 2-2002/5-2002 **linee guida per l'evoluzione della soluzione di protocollo informatico del ministero del Tesoro** (buyer: SOGEI). Emanuele was the major contributor to the document.
- 10-2001/12-2001 **Regione Lombardia intranet portal feasibility study** (buyer: Regione Lombardia) Emanuele was the major contributor to the feasibility study.
- 6-2001/10-2001 **Studio per l'Evoluzione in ottica CRM per l'assistenza agli utenti del sistema informativo del ministero delle finanze** (buyer: SOGEI) Emanuele was the major contributor to the document.
- 5-2001/6-2001 **Studio di fattibilità del portale internet della Regione Lombardia** (buyer: Regione Lombardia) Emanuele was the one of the contributors to the feasibility study.

Full list of Publications

INPRESS

- [j23] Shima Zahmatkesh, Emanuele Della Valle: Continuous Top-k Approximated Join of Streaming and Evolving Distributed Data. *Semantic Web Journal* (IN PRESS)
- [j22] Marco Balduini, Marco Brambilla, Emanuele Della Valle, Christian Marazzi, Tahereh Arabghalizi, Behnam Rahdari, Michele Vescovi: Models and Practices in Urban Data Science at Scale. *Big Data Research* (IN PRESS) <https://doi.org/10.1016/j.bdr.2018.04.003>

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- [c100] Ahmed Awad, Riccardo Tommasini, Mahmoud Kamel, Emanuele Della Valle, Sherif Sakr: D2IA: Stream Analytics on User-Defined Event Intervals. *CAiSE 2019*: 346-361
- [c99] Pieter Bonte, Riccardo Tommasini, Filip De Turck, Femke Ongenae, Emanuele Della Valle: C-Sprite: Efficient Hierarchical Reasoning for Rapid RDF Stream Processing. *DEBS 2019*: 103-114
- [c98] Riccardo Tommasini, Sherif Sakr, Marco Balduini, Emanuele Della Valle: An Outlook to Declarative Languages for Big Streaming Data. *DEBS 2019*: 199-202
- [c97] Riccardo Tommasini, Robin Keskisärkkä, Jean-Paul Calbimonte, Eva Blomqvist, Emanuele Della Valle, Albert Bifet: Continuous Analytics of Web Streams. *WWW (Companion Volume) 2019*: 1323-1325

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- [j21] Pieter Bonte, Riccardo Tommasini, Emanuele Della Valle, Filip De Turck, Femke Ongenae: Streaming MASSIF: Cascading Reasoning for Efficient Processing of IoT Data Streams. *Sensors* 18(11): 3832 (2018)
- [j20] Martin Hirzel, Guillaume Baudart, Angela Bonifati, Emanuele Della Valle, Sherif Sakr, Akrivi Vlachou: Stream Processing Languages in the Big Data Era. *SIGMOD Record* 47(2): 29-40 (2018)
- [c96] Marco Balduini, Sivam Pasupathipillai, Emanuele Della Valle: Cost-Aware Streaming Data Analysis: Distributed vs Single-Thread. *DEBS 2018*: 160-170
- [c95] Riccardo Tommasini, Pieter Bonte, Emanuele Della Valle, Femke Ongenae, Filip De Turck: A Query Model for Ontology-Based Event Processing over RDF Streams. *EKAW 2018*: 439-453
- [c94] Ruben Taelman, Riccardo Tommasini, Joachim Van Herwegen, Miel Vander Sande, Emanuele Della Valle, Ruben Verborgh: On the Semantics of Tpf-qs towards Publishing and Querying rdf Streams at Web-scale. *SEMANTICS 2018*: 43-54
- [c93] Emanuele Della Valle, Riccardo Tommasini, Marco Balduini: Engineering of Web Stream Processing Applications. *Reasoning Web 2018*: 223-226
- [c92] Riccardo Tommasini, Yehia Abo Sedira, Daniele Dell'Aglio, Marco Balduini, Muhammad Intizar Ali, Danh Le Phuoc, Emanuele Della Valle, Jean-Paul Calbimonte: VoCaLS: Describing Streams on the Web. *International Semantic Web Conference (P&D/Industry/BlueSky) 2018*
- [c91] Riccardo Tommasini, Emanuele Della Valle: L'Inking You To A Knowledge Graph.

International Semantic Web Conference (P&D/Industry/BlueSky) 2018

- [c90] Riccardo Tommasini, Yehia Abo Sedira, Daniele Dell'Aglio, Marco Balduini, Muhammad Intizar Ali, Danh Le Phuoc, Emanuele Della Valle, Jean-Paul Calbimonte: VoCaLS: Vocabulary and Catalog of Linked Streams. International Semantic Web Conference (2) 2018: 256-272

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- [j19] Daniele Dell'Aglio, Emanuele Della Valle, Frank van Harmelen and Abraham Bernstein: Ten years of Stream Reasoning. Now what?. J Data Science. Data Science, 1 (1-2), pp. 59-83, 2017, ISSN: 2451-8484.
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- [c84] Riccardo Tommasini, Ben De Meester, Pieter Heyvaert, Ruben Verborgh, Erik Mannens, Emanuele Della Valle: Representing Dockerfiles in RDF. International Semantic Web Conference (Posters, Demos & Industry Tracks) 2017
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- [c80] Yehia Abo Sedira, Riccardo Tommasini, Emanuele Della Valle: MobileWave: Publishing RDF Streams From SmartPhones. International Semantic Web Conference (Posters, Demos & Industry Tracks) 2017
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- [c68] Daniele Dell'Aglio, Jean-Paul Calbimonte, Emanuele Della Valle, Óscar Corcho: Towards a

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- [c63] Soheila Dehghanzadeh, Alessandra Mileo, Daniele Dell'Aglio, Emanuele Della Valle, Shen Gao, Abraham Bernstein: Online View Maintenance for Continuous Query Evaluation. WWW (Companion Volume) 2015: 25-26
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- [e6] Elena Simperl, Barry Norton, Dunja Mladenic, Emanuele Della Valle, Irini Fundulaki, Alexandre Passant, Raphaël Troncy: The Semantic Web: ESWC 2012 Satellite Events - ESWC 2012 Satellite Events, Heraklion, Crete, Greece, May 27-31, 2012. Revised Selected Papers. Lecture Notes in Computer Science 7540, Springer 2015, ISBN 978-3-662-46640-7 [contents] [e5] Kostis Kyzirakos, Cory A. Henson, Matthew Perry, Dalia Varanka, Rolf Grütter, Jean-Paul Calbimonte, Irene Celino, Emanuele Della Valle, Daniele Dell'Aglio, Markus Krötzsch, Stefan Schlobach: Joint Proceedings of the 1st Joint International Workshop on Semantic Sensor Networks and Terra Cognita (SSN-TC 2015) and the 4th International Workshop on Ordering and Reasoning (OrdRing 2015) co-located with the 14th International Semantic Web Conference (ISWC 2015), Bethlehem, Pennsylvania, United States, October 11th - and - 12th, 2015. CEUR Workshop Proceedings 1488, CEUR-WS.org 2015

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- [j14] Marco Balduini, Irene Celino, Daniele Dell'Aglio, Emanuele Della Valle, Yi Huang, Tony Kyung-il Lee, Seon-Ho Kim, Volker Tresp: Reality mining on micropost streams - Deductive and inductive reasoning for personalized and location-based recommendations. Semantic Web 5(5): 341-356 (2014)
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