

Curriculum Vitae of Dr. Marco Angelini



Dr. Marco Angelini is a PostDoc in Engineering in Computer Science at University of Rome “La Sapienza”, Italy, Department of Computer, Control and Management Sciences & Engineering. He defended his Ph.D. thesis, entitled “**Predictive Visual Analytics: dealing with Situation Awareness, Prediction and Forecasting**” on February 20th 2017, with the final grade of Level A (“Excellent”, top 25%). He previously studied Computer Science and Engineering at University of Rome “La Sapienza”, where he obtained a master degree in a.a. 2010/2011, with the final grade of 110/110. He is a member and coordinates research projects of **A.W.A.RE group (Advanced Visualization % Visual Analytics REsearch group)**. He is a member of the **Centre for Cyber-Intelligence and Security (CIS)** of University of Rome “La Sapienza”, where he contributed to the success of the EU FP-7 project “PANOPTESEC”, providing automatic detection, management and reaction to cyber-threats for Critical Infrastructures. Marco Angelini is member of **CINI Cyber-Security National Laboratory**, where he coordinates national projects with the goal of strengthening the Cyber-Security status of an organization, both in public and private sectors.

His main research interests include *Visual analytics* (the process of combining visualization of information, interaction by user and analytical computation for solving heavy computational problems), *Information Visualization* (with specific focus on coordinated multiple views and web-technologies and frameworks for visualizing large set of data) and *Cyber-Security (focused on designing visual analytics solutions for cyber-defense of critical infrastructures, open-source intelligence and malware analysis)*: these research topics are applied in different fields, ranging from Network Medicine, Information Retrieval, Telecommunications field, Computer networks.

As a result of his activities, Dr. Marco Angelini has published more than **40 papers, including 10 peer-reviewed journal papers, 29 peer-reviewed conference papers, and 3 peer-reviewed posters**(including CLEF 2012, IEEE VAST 2012, IliX 2012, euroHCIR 2012 and TAIA 2012, EuroVA 2013, IEEE VIZSEC 2015-2017-2018, EuroVA 2016, IEEE TVCG 2016, ITASEC 2017, IVAPP 2017, Eurovis 2018, IEEE Transactions on Visualization and Computer Graphics).

Dr. Marco Angelini had teaching experience for computer science courses since 2013 in the School of Engineering at SAPIENZA.

Dr. Marco Angelini is actually a tutor for the courses of “Fundamentals of Informatics I” for the bachelor in Computer Science, and tutor in “Visual Analytics” for the master in Computer Science at Faculty of Computer Science Engineering at Sapienza.

Dr. Marco Angelini has taught in 2017 in the School of Engineering of SAPIENZA a eight lessons seminar on Graphical library “d3.js” and its applications for the master course “Visual Analytics”

Dr. Marco Angelini has taught in 2016 in the School of Engineering of SAPIENZA a six lessons seminar on Graphical library “d3.js” and its applications in the elective on Information Visualization course at the master level of Computer Science.

In 2016 he acted as **assistant professor** for the courses of “Fundamentals of Informatics” for the bachelor in Management Engineering.

Dr. Marco Angelini has taught in 2015 in the School of Engineering of SAPIENZA a six lessons seminar on Graphical library “d3.js” and its applications in the elective on Information Visualization course at the master level of Computer Science. He acted as tutor for the courses of “Fundamentals of Informatics”.

Dr. Marco Angelini has taught in 2014 in the School of Engineering of SAPIENZA a six lessons seminar on Graphical library “d3.js” and its applications in the elective on Information Visualization course at the master level of Computer Science. He acted as tutor for the courses of “Fundamentals of Informatics” and “Programming techniques”.

Dr. Marco Angelini has taught in 2013 in the School of Engineering of SAPIENZA a six lessons seminar on Graphical library “d3.js” and its applications in the elective on Information Visualization course at the master level of Computer Science.

Dr. Marco Angelini has taught in 2012 in the School of Engineering of SAPIENZA a two lessons seminar on Graphical library “d3.js” and its applications in the elective on Information Visualization course at the master level of Computer Science.

He co-advised, as of today, more than 25 **master theses and 6 bachelor theses**.

In 2011 Dr. Marco Angelini has been involved for his master thesis in the development and finalization of the main UI component of the FP7 European project “SM4All”. From 2011 to 2013 he has been involved in FP7 European project “PROMISE”, aimed at advancing the evaluation of Information Retrieval systems. From 2013 to 2016 he has been involved in the FP7 European project “PANOPTESSEC” aiming at providing an automated system for dealing with cyber-threats targeted at Critical Infrastructures.

Dr. Marco Angelini, born on August 16, 1979 in Roma, Italy.

Contact details

Citizenship: Italian

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Homepage: <https://sites.google.com/dis.uniroma1.it/angelini>

1. Education

Ph. D. in Computer Science and Engineering, SAPIENZA Università di Roma, Italy, 2017.

Dissertation: “*Predictive Visual Analytics: dealing with Situation Awareness, Prediction and Forecasting*”

Advisor: Prof. Giuseppe Santucci

Master degree in Computer Science and Engineering, SAPIENZA Università di Roma, Italy, 2011.

Dissertation: “*Interfaccia Utente per il sistema domotico “SM4All”:Reverse Engineering, reingegnerizzazione e test del modulo Abstract Adaptive Interface*”

Advisor: Prof. Giuseppe Santucci, co-advisor: Dr. Giuseppe Tino, mark: 110/110

2. Key Skills

Dr. Marco Angelini is a skilled teacher and user of the following programming languages and tools:

- Java, Java2EE

- Javascript, Php, Python, R, d3.js
- C, C++, Objective C
- Html, xml, web development design tools
- Matlab and Simulink
- Latex, Word, Excel, Powerpoint, Keynotes

Dr. Marco Angelini is fluent in both written and spoken English language, and at beginner level in written and spoken Japanese Language.

3. Working Experience

February 2016 - present

PostDoc in Visual Analytics at SAPIENZA Università di Roma Dipartimento di Ingegneria Informatica, Automatica e Gestionale

January 2015-present

Member of CINI Cybersecurity National LAB

December 2013 - 2017

External consultant of C.R.E.A. (Consiglio per la Ricerca e la sperimentazione in Agricoltura) for cyber-security

October 2016 – November 2016

Cyber-security consultant for Indonesian National Security Agency.

October 2012 – February 2016

Ph.D. Student SAPIENZA Università di Roma
Dipartimento di Ingegneria Informatica, Automatica e Gestionale
SSD: ING/INF-05

February 2012 – September 2012

Research associate SAPIENZA Università di Roma

March 2002 – August 2006

Dipartimento di Ingegneria Informatica, Automatica e
Gestionale
SSD: ING/INF-05

Coordinator at E.U.R. (Edizioni Universitarie Romane)
for preparation and evaluation of admission test to
bachelor degree university courses and S.S.I.S. courses.

4. Research

The research activity is currently performed in the areas of *Visual Analytics*, *Information Visualization*, *Big Data Analysis* and *Cyber-security* at Dipartimento di Ingegneria Informatica, Automatica e Gestionale, SAPIENZA Università di Roma.

Dr. Marco Angelini's research focuses on:

- **Visual Analytics**
 - Data Mining
 - Interaction and visualization in large data set scenario
- **Information Visualization**
 - Data Representation
 - Visual Mapping
- **Network medicine**
 - Visual exploration of genomics data
- **Big Data Analysis**
 - Design progressive methods to manage big data computation
 - Design visual analytics environment for allowing exploratory analysis of Big Data
- **Cyber-security**
 - Support the security operators in managing cyber-threats
 - Malware analysis
 - Open Source Intelligence (OSINT)
- **Information Retrieval**
 - Development of new metrics for evaluation
 - Tools for automated evaluation
- **Collaborative environments**
 - Shared tools and workspaces
 - Data indexing and knowledge sharing

The previous interests are challenged in the application domains of User Interfaces, Domotics (Home Automation) and web services.

Dr. Marco Angelini has published more than **40 papers** (see the complete list at the end of the document) in peer-reviewed international journals and conferences .

5. Projects

Here is a list of past and current research projects Marco Angelini has been involved in:

04/04/2017- present	Technical coordinator	CINI Cybersecurity National Lab project with Italian public administration.
01/12/2013 – 2016	Designer and developer of visual analytics environments for cyber-security response systems	<p>PANOPTESec (FP7-ICT-2013.10, project in the Cooperation program of FP7)</p> <p>Financing to SAPIENZA: about 600K€ Overall financing: 6.000 K€</p> <p>The projects applies Information Visualization concepts on top of the cyber-security domain, aiming at advancing the insights in the different process of critical infrastructure defence and cyber-attacks automated response.</p>
01/11/2011 – 30/10/2013	Designer and developer on multiple-coordinated views Environments for Information Retrieval evaluation.	<p>PROMISE NoE(FP7-ICT 2009.4.3, Intelligent Information management, project in the Cooperation program of FP7)</p> <p>Financing to SAPIENZA/CINI: about 230K€ (divided as 170/30K€)</p> <p>The projects applies Information Visualization concepts on top of the Information Retrieval domain, aiming at advancing the insights in the different process of an evaluation campaign.</p>

01/04/2011 – 31/10/2011

User Interface component designer and developer .
Project manager: prof. Roberto Baldoni

SM4All (FP7-224332, STREP project in the Cooperation program of FP7)

Overall funding from EU: 2.995K€

The project applies BCIs, service composition and planning, service oriented architectures to the field of home automation in order to design next-generation technologies for AAL and home automation

6. Teaching

2018/2019

- Teaching Assistant for the course of **Visual Analytics**, 6 CFU at La Sapienza Università di Roma, Master of Information Engineering

2017/2018

- Teaching Assistant for the course of **Information Systems** at LUISS University, School of Economics and Business
- Teaching Assistant for the course of **Fundamentals of Informatics 1**, 6 CFU at La Sapienza Università di Roma, School of Information Engineering
- Teaching Assistant for the course of **Visual Analytics**, 6 CFU at La Sapienza Università di Roma, Master of Information Engineering

2016/2017

- Teaching Assistant for the course of **Fundamentals of Informatics 1**, 6 CFU at La Sapienza Università di Roma, School of Information Engineering
- Teaching Assistant for the course of **Visual Analytics**, 6 CFU at La Sapienza Università di Roma, Master of Information Engineering

2015/2016

- Teaching Assistant for the course of **Fundamentals of Informatics 1**, 6 CFU at La Sapienza Università di Roma, School of Information Engineering
- Assistant Professor for the course of **Fundamentals of Informatics 1**, 6 CFU at La Sapienza Università di Roma, School of Management Engineering
- Seminar on “d3.js” graphic library in the elective on **Information Visualization** 3 CFU at La Sapienza Università di Roma, School of Information Engineering (6 lessons)

2014/2015

- Teaching Assistant for the course of **Fundamentals of Informatics 1**, 6 CFU at La Sapienza Università di Roma, School of Information Engineering

2013/2014

- Seminar on “d3.js” graphic library in the elective on **Information Visualization** 3 CFU at La Sapienza Università di Roma, School of Information Engineering (6 lessons)
- Teaching Assistant for the course of **Fundamentals of Informatics 1**, 6 CFU at La Sapienza Università di Roma, School of Information Engineering
- Teaching Assistant for the course of **Programming Techniques**, 6 CFU at La Sapienza Università di Roma, School of Information Engineering (6 lessons)
- Seminar on “d3.js” graphic library in the elective on **Information Visualization** 3 CFU at La Sapienza Università di Roma, School of Information Engineering (6 lessons)

2012/2013

- Teaching Assistant for the course of **Fundamentals of Informatics 1**, 6 CFU at La Sapienza Università di Roma, School of Information Engineering
- Seminar on “d3.js” graphic library in the elective on **Information Visualization** 3 CFU at La Sapienza Università di Roma, School of Information Engineering (6 lessons)

2011/2012

- Seminar on “d3.js” graphic library in the elective on **Information Visualization** 3 CFU at La Sapienza Università di Roma, School of Information Engineering (2 lessons)

7. Awards

- In 2017 Marco Angelini was an invited speaker at the ACM chapter Rome discussing the topic “**Predictive Visual Analytics**”.
- In 2017 the paper “**The Dark side of Progressive Visual Analytics**” was an honorable mention at Information Visualization and Scientific Visualization (WVIS) in the 30th Conference on Graphics, Patterns and Images (SIBGRAP'17).
- In 2018 the paper “**ROPmate: Visually Assisting the Creation of ROP-based Exploits**” Was the best paper at IEEE VizSec 2018.

8. Publications

Journal papers (peer-reviewed)

[j1] Marco Angelini, Juri Buchmüller, Daniel A. Keim, Philipp Meschenmoser and Giuseppe Santucci (2019), “**SurgeryCuts: Embedding Additional Information in Maps without Occluding Features**”. Computer Graphics Forum, 38: 237-247. doi:10.1111/cgf.13685

[j2] Marco Angelini, Tiziana Catarci, Giuseppe Santucci, "**IVAN: An Interactive Herlofson's Nomogram Visualizer for Local Weather Forecast**", MDPI Computers 8(3), 53, 2019
<https://doi.org/10.3390/computers8030053>

[j3] Marco Angelini, Silvia Bonomi, Simone Lenti, Giuseppe Santucci, Stefano Taggi, "**MAD: A visual analytics solution for Multi-step cyber Attacks Detection**". Journal of Computer Languages, Volume 52, 2019, Pages 10-24, ISSN 2590-1184,
<https://doi.org/10.1016/j.col.2018.12.007>.

[j4] Marco Angelini, Graziano Blasilli, Tiziana Catarci, Simone Lenti, Giuseppe Santucci. "**Vulnus: Visual Vulnerability Analysis for Network Security**". IEEE Transactions on Visualization and Computer Graphics (TVCG), Article in press, 2018

[j5] Marco Angelini; Giuseppe Santucci; Heidrun Schumann; Hans-Jörg Schulz. 2018. "**A Review and Characterization of Progressive Visual Analytics**." *Informatics* 5, no. 3: 31.

[j6] Paolo Ceravolo, Antonia Azzini, Marco Angelini, Tiziana Catarci, Philippe Cudré-Mauroux, Ernesto Damiani, Alexandra Mazak, Maurice Van Keulen, Mustafa Jarrar, Giuseppe Santucci, Kai-Uwe Sattler, Monica Scannapieco, Manuel Wimmer, Robert Wrembel and Fadi Zaraket. **Big Data Semantics**. Journal of Data Semantics.

[j7] Marco Angelini, Vanessa Fazzini, Nicola Ferro, Giuseppe Santucci, Gianmaria Silvello: **CLAIRE: A combinatorial visual analytics system for information retrieval evaluation**. Journal of Information Processing and Management, 2018

[j8] Schulz, H. J., Angelini, M., Santucci, G., & Schumann, H. (2016). "**An Enhanced Visualization Process Model for Incremental Visualization**". IEEE transactions on visualization and computer graphics (2016), 22(7), 1830-1842.

[j9] Angelini, Marco, and Giuseppe Santucci. "**Cyber situational awareness: from geographical alerts to high-level management**". Journal of Visualization (2016): 1-7.

[j10] Marco Angelini, Nicola Ferro, Giuseppe Santucci, Gianmaria Silvello: "**VIRTUE: A visual tool for information retrieval performance evaluation and failure analysis**". Journal of Visual Languages and Computing, 25(4): 394-413 (2014)

Conferences and Workshops (peer-reviewed)

[C1] Marco Angelini, Graziano Blasilli, Lorenzo Farina, Simone Lenti, Giuseppe Santucci "**NEMESIS (Network Medicine analysisIS): towards visual exploration of network medicine data**" - IVAPP – 10th International Conference on Information Visualization Theory and Applications, Prague, 2019.

[C2] Marco Angelini, Tiziana Catarci, Giuseppe Santucci. "**Visualizing the Herlofson's Nomogram**". CEUR Workshop Proceedings of REMS - Multidisciplinary Symposium on ICT Research in Russian Federation and Europe on "Integrating Research Agendas and Devising Joint Challenges", 2018

[C3] Marco Angelini, Graziano Blasilli, Pietro Borrello, Emilio Coppa, Daniele Cono D'Elia, Serena Ferracci, Simone Lenti, Giuseppe Santucci. "**ROPMate: Visually Assisting the Creation of ROP-based Exploits**". **BEST PAPER** - Proceedings of the 2018 IEEE Symposium on Visualization for Cyber Security (VizSec), 2018

[C4] Leilani Battle, Marco Angelini, Carsten Binnig, Tiziana Catarci, Philipp Eichmann, Jean-Daniel Fekete, Giuseppe Santucci, Michael Sedlmair, and Wesley Willett. 2018.

- "Evaluating Visual Data Analysis Systems: A Discussion Report." In Proceedings of the Workshop on Human-In-the-Loop Data Analytics (HILDA'18). ACM, New York, NY, USA, Article 4, 6 pages. DOI: <https://doi.org/10.1145/3209900.3209901>
- [C5] Marco Angelini, Graziano Blasilli, Simone Lenti and Giuseppe Santucci: **STEIN: Speeding Up Evaluation Activities with a Seamless Testing Environment INtegrator**. Proceedings of EuroVis 2018
- [C6] Marco Angelini, Luca Bardone, Marina Geymonat, Mario Mirabelli, Chiara Remondino, Giuseppe Santucci, Barbara Stabellini and Paolo Tamborrini: **A Visual Analytics System for Managing Mobile Networks Failures**. Proceedings of the 9th International EuroVis Workshop on Visual Analytics (EuroVA '18)
- [C7] Marco Angelini, Silvia Bonomi, Emanuele Borzi, Antonella Del Pozzo, Simone Lenti, Giuseppe Santucci: **An Attack Graph-based On-line Multi-step Attack Detector**. 19th International Conference on Distributed Computing and Networking (ICDCN) 2018: 40:1-40:10
- [C8] Marco Angelini, Tiziana Catarci, Massimo Mecella, Giuseppe Santucci: **The Visual Side of the Data**. A Comprehensive Guide Through the Italian Database Research 2018: 3-25
- [C9] Marco Angelini, Giuseppe Santucci. "**The Dark Side of Progressive Visual Analytics**", Workshop on Visual Analytics, Information Visualization and Scientific Visualization (WVIS) in the 30th Conference on Graphics, Patterns and Images (SIBGRAP'17), 2017
- [C10] Angelini, Marco, et al. "**The goods, the bads and the uglies: Supporting decisions in malware detection through visual analytics**." *Visualization for Cyber Security (VizSec), 2017 IEEE Symposium on*. IEEE, 2017.
- [C11] Angelini, Marco, Simone Lenti, and Giuseppe Santucci. "**CRUMBS: A cyber security framework browser**." *Visualization for Cyber Security (VizSec), 2017 IEEE Symposium on*. IEEE, 2017.
- [C12] Marco Angelini, Nicola Ferro, Giuseppe Santucci, Gianmaria Silvello. "**Visual Analytics for Information Retrieval Evaluation Campaigns**." EuroVis Workshop on Visual Analytics (EuroVA), 2017
- [C13] Angelini, M., Santucci, G., "**On Visual Stability and Visual Consistency for Progressive Visual Analytics**", in proceedings of International conference on Information Visualization Theory and Applications, Porto, Portugal, 2017.
- [C14] Angelini, M., Corriero, R., Franceschi, F., Geymonat, M., Mirabelli, M., Remondino, C., & Stabellini, B. (2016). "**A Visual Analytics System for Mobile Telecommunication Marketing Analysis**". In proceedings of EuroVA 2016.
- [C15] Angelini, M., Ferro, N., Santucci, G., & Silvello, G. (2016). "**A Visual Analytics Approach for What-If Analysis of Information Retrieval Systems**". In Proc. 39th Annual International ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR 2016). ACM Press, New York, USA.
- [C16] Angelini, Marco, and Giuseppe Santucci. "**Visual cyber situational awareness for critical infrastructures**." Proceedings of the 8th International Symposium on Visual Information Communication and Interaction. ACM, 2015.

- [C17] Angelini, M., Prigent, N., & Santucci, G. (2015, October). **“PERCIVAL: proactive and reactive attack and response assessment for cyber incidents using visual analytics”**. In Visualization for Cyber Security (VizSec), 2015 IEEE Symposium on (pp. 1-8). IEEE.
- [C18] Angelini M., Santucci G.,Wiemer D., **“Geographical visualization for security risk and mission impact assessment”**, Special Interest Group-133, NATO, Copenhagen 2015.
- [C19] Marco Angelini, Nicola Ferro, Giuseppe Santucci, Gianmaria Silvello: **A Visual Interactive Environment for Making Sense of Experimental Data**. ECIR 2014: 767-770
- [C20] **Cumulated Relative Position:A Metric for Ranking Evaluation**, M. Angelini, N. Ferro, K. Jarvelin, H. Keskustalo, A. Pirkola, G. Santucci, G. Silvello, in proceedings of IIR2013, 16-17 January, Pisa
- [C21] **Visual Interactive Failure Analysis: Supporting Users in Information Retrieval Evaluation**, M. Angelini, N. Ferro, G. Granato, G. Santucci, G. Silvello, in proceedings of IIR2013, 16-17 January, Pisa
- [C22] **A Visual Analytic Tool for Experimental Evaluation**, M. Angelini, N. Ferro, G. Santucci, G. Silvello, in proceedings of SEBD 2013, 30-3 June/july 2013, Roccella Jonica
- [C23] **Modeling Incremental Visualization**, M. Angelini, G. Santucci, in proceedings of EuroVA, EuroVis 2013 conference, 17-21 June, Leipzig, Germany
- [C24] **Improving Ranking Evaluation employing Visual Analytics**, M. Angelini, N. Ferro, G. Santucci, G. Silvello, in proceedings of CLEF 2013 Conference, 23-26 September, Valencia, Spain
- [C25] **Time-Aware Exploratory Search: Exploring Word Meaning through Time**, Odijk D., Santucci G., de Rijke M., Angelini M, Granato G., SIGIR 2012 Workshop on Time-aware Information Access,Portland OR,USA.
- [C26] **Collaborative Environment of the PROMISE Infrastructure: an "ELEGantt" approach**, M. Angelini, C. Bartolini, G. Convertino, G. Granato, P. Hansen, G. Santucci, euroHCIR2012 Nijmegen, 24-25th August, pag 55 of proceedings.
- [C27] **Cumulated Relative Position:A Metric for Ranking Evaluation**, M. Angelini, N. Ferro, K. Jarvelin, H. Keskustalo, A. Pirkola, G. Santucci, G. Silvello, conference paper for CLEF 2012,17-20 September, Rome
- [C28] **Visual Interactive Failure Analysis: Supporting Users in Information Retrieval Evaluation**, M. Angelini, N. Ferro, G. Granato, G. Santucci, G. Silvello, in proceedings of IliX 2012, 21-24 August 2012,Nijmegen.
- [C29] **Information Retrieval Failure Analysis: Visual Analytics as a Support for Interactive “What-if” Investigation**, M. Angelini, N. Ferro, G. Granato, G. Santucci, G. Silvello, peer-reviewed poster for VAST 12,14-19 October, Seattle, WA,USA.