

# Simone Lenti

Research Fellow in Visual Analytics and Cybersecurity

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Ai fini della pubblicazione in ottemperanza all'art 15 del D. Lgs. 33/2013

## EDUCATION

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- Ph.D. in Engineering in Computer Science**, *Sapienza University of Rome* July 2021  
THESIS Managing Human Factors in Cybersecurity through Visual Analytics  
ADVISOR Prof. Giuseppe Santucci  
FINAL GRADES Excellent
- M.Sc. in Engineering in Computer Science**, *Sapienza University of Rome* January 2017  
THESIS Panoptesec: a Visual Analytics environment for dealing with proactive and reactive analyses of cyber-attacks  
ADVISOR Prof. Giuseppe Santucci  
FINAL GRADES 110/110
- B.Sc. in Engineering in Computer Science (Ingegneria Informatica)**, *Sapienza University of Rome* July 2013  
THESIS An IT system managing business deals between one seller and several buyers using different payment methods  
ADVISOR Prof. Leonardo Querzoni  
FINAL GRADES 100/110

## ACADEMIC APPOINTMENTS

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- Research Fellowship**, BANDO N. 16/2021 SSD ING-INF/05 May 2021 - April 2022  
*Department of Computer, Control, and Management Engineering "Antonio Ruberti"*  
*Sapienza University of Rome*
- Research Fellowship**, BANDO N. 9A/2018 SSD ING-INF/05 October 2018 - September 2020  
*Department of Computer, Control, and Management Engineering "Antonio Ruberti"*  
*Sapienza University of Rome*

## TEACHING EXPERIENCE

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- AY 2021-2022  
**Adjunct Professor (Docente a contratto)** of "Fondamenti di Informatica" (3 CFU)  
*B.Sc. in Communication Engineering (Ingegneria delle Comunicazioni), Sapienza University of Rome*  
**Adjunct Professor (Docente a contratto)** of "Immersive Environments" (3 CFU)  
*M.Sc. in Design, Multimedia and Visual Communication, Sapienza University of Rome*  
**Adjunct Professor (Docente a contratto)** of "Information Technology for Public Health Nursing" (2 CFU)  
*B.Sc. in Nursing, Campus Bio-Medico University of Rome*
- AY 2020-2021  
**Adjunct Professor (Docente a contratto)** of "Fondamenti di Informatica" (3 CFU)  
*B.Sc. in Communication Engineering (Ingegneria delle Comunicazioni), Sapienza University of Rome*  
**Adjunct Professor (Docente a contratto)** of "Immersive Environments" (3 CFU)  
*M.Sc. in Design, Multimedia and Visual Communication, Sapienza University of Rome*  
**Adjunct Professor (Docente a contratto)** of "Information Technology for Public Health Nursing" (2 CFU)  
*B.Sc. in Nursing, Campus Bio-Medico University of Rome*  
**Seminars** on "Visual Analytics techniques for network security" (~ 4 hours) inside the course of "Visual Analytcs"  
*M.Sc. in Engineering in Computer Science, Sapienza University of Rome*
- AY 2019-2020  
**Seminars** on "Visual Analytics techniques for network security" (~ 4 hours) inside the course of "Visual Analytcs"  
*M.Sc. in Engineering in Computer Science, Sapienza University of Rome*  
**Seminars** on "Risk Management for critical infrastructures" (~ 4 hours) inside the course of "Security Governance"  
*M.Sc. in Cybersecurity, Sapienza University of Rome*  
**Seminars** on "Data Breaches" (~ 4 hours) inside the professional course of "Risk management for SMEs and emerging risk"  
*University of Parma*
- AY 2018-2019  
**Seminars** on "Visual Analytics techniques for network security" (~ 4 hours) inside the course of "Visual Analytcs"  
*M.Sc. in Engineering in Computer Science, Sapienza University of Rome*  
**Seminars** on "Risk Management for critical infrastructures" (~ 4 hours) inside the course of "Security Governance"  
*M.Sc. in Cybersecurity, Sapienza University of Rome*  
**Seminars** on "Attacks scenarios and the National Framework" (~ 8 hours) inside the course of "Cybersecurity for SMEs"

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CRIT: Polo per l'innovazione digitale, Cremona, Italy

AY 2017-2018

**Seminars** on “Visual Analytics techniques for network security” (~ 4 hours) inside the course of “Visual Analytics”  
*M.Sc. in Engineering in Computer Science, Sapienza University of Rome*

## RESEARCH INTERESTS

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His research activities focuses on modeling the humans' role in cybersecurity, connecting them to standard and repeatable methods, and designing Visual Analytics solutions to support them.

Research activities on the information needs of cybersecurity professionals had been applied in different fields of cybersecurity, among the others:

- Support security managers and top management in making decisions on security activities required to implement cybersecurity standards and guidelines;
- Support advanced technical activities, such as dissection of software, malware, and binary files by designing and developing ad-hoc Visual Analytics solutions;
- Support vulnerability assessment and risk-based analysis proposing new threat models and tailored Visual Analytics environments gathering information from different sources and unfolding the relation and the impact of underlying network and security events on the mission operations of the monitored network.

Strictly related to the this field, he investigated the threats posed by the end-users of ICT networks that may behave insecurely from a cybersecurity point of view, increasing the network exposure.

The conducted activities led also to contributions in the Visual Analytics and Information Visualization domains, among the others: analysis of the dimension arrangements problem in RadViz visualization and proposal of a new metric and sub-optimal arrangements to minimize the distortions, proposal of visual selectors providing feedback during filtering activities, and exploration of Progressive Visual Analytics techniques for clustering analyses.

## RESEARCH PROJECTS

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He has been involved in the following projects:

EU-H2020 (GA 826293) **PANACEA**, [www.panacearesearch.eu](http://www.panacearesearch.eu) January 2019 - February 2022  
*Protection and privAcY of hospital and health iNfrastructures with smArt Cyber sEcurity and cyber threat toolkit for dAta and people*

PANACEA will deliver a complete cybersecurity toolkit providing a holistic approach for Health Care Institutions made up of a combination of technical (SW platforms for dynamic risk assessment, secure information sharing & security-by-design) and non-technical (procedures, governance models, people behaviour tools) toolkits.

ROLE	Participant
CONTRIBUTOR	D1.3, D2.1, D2.2, D3.1, D3.3, D3.7, D3.8, D3.13, D3.14, D3.15, D6.3
ACTIVITIES	<ul style="list-style-type: none"><li>• Modeling of innovative attack scenarios in Network Security</li><li>• Design and development of a Visual Analytics environment for the risk management focused on the infrastructures, business model and human factor</li></ul>

EU-FP7 (GA 610416) **PANOPESEC**, [www.panoptesec.eu](http://www.panoptesec.eu) May 2016 - December 2016  
*Dynamic Risk Approaches for Automated Cyber Defence*

The concept of the PANOPESEC consortium is to deliver a beyond-state-of-the-art prototype of an automated cyber defence decision support system to demonstrate operational use of Dynamic Risk Approaches for Automated Cyber Defence algorithms, architecture and design. PANOPESEC delivers this capability through a modular, standards-based integration of technologies that collectively deliver a beyond-the-state-of-the-art capability to address cyber vulnerabilities and incidents in real-time.

ROLE	Participant
CONTRIBUTOR	D6.2, D6.3
ACTIVITIES	<p>Design and development of a Visual Analytics environment for:</p> <ul style="list-style-type: none"><li>• Exploration of the network vulnerabilities through an attack graph model, aiming to evaluate possible defence improvements</li><li>• Detection of ongoing attacks, evaluation of their possible evolution using the attack graph model and identification of possible countermeasure</li></ul>

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## ACADEMIC ACTIVITIES: TALKS

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He has participated as speaker in the following International Conferences:

- 12th EuroVis Workshop on Visual Analytics (EuroVA 2021)
- 18th IEEE Symposium on Visualization for Cyber Security (VizSec 2021)
- 4th Italian Conference on Cybersecurity (ItaSec 2020)
- 16th IEEE Symposium on Visualization for Cyber Security (VizSec 2019)
- 15th IEEE Symposium on Visualization for Cyber Security (VizSec 2018)
- 20th EG/VGTC Conference on Visualization (EuroVis 2018)
- 2nd Italian Conference on Cybersecurity (ItaSec 2018)
- 14th IEEE Symposium on Visualization for Cyber Security (VizSec 2017)

## ACADEMIC ACTIVITIES: STUDENTS SUPERVISOR

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He is currently co-advisor of 1 student enrolled in the M.Sc. in Engineering in Computer Science and 1 student enrolled in the M.Sc. in Cybersecurity at Sapienza University of Rome, on “Visual Analytics techniques for prioritizing cybersecurity vulnerabilities” and “Definition of mitigation strategies using an attack graph model”.

He has been co-advisor of 3 students enrolled in the M.Sc. in Engineering in Computer Science at Sapienza University of Rome, on “Multi-Layer attack graph modeling for cybersecurity risk assessment”, “Progressive Visual Analytics techniques for clustering analysis”, and “Visual Analytics techniques supporting firmware analysis”.

## ACADEMIC ACTIVITIES: OTHERS

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He is Poster Co-Chair for the 24th EG Conference on Visualization (EuroVis 2022), June 2022, Rome, Italy.

He served as external reviewer for:

- IEEE Conference on Visualization & Visual Analytics (VIS) - 2020, 2022
- International Conference on Advanced Visual Interfaces (AVI) - 2020, 2022
- IEEE Symposium on Visualization for Cyber Security (VizSec) - 2019

## BIBLIOMETRIC INFORMATION

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Number of Publications: 17  
Peer-reviewed International Journals: 3  
Peer-reviewed International Conferences and Workshops: 14

The complete list of publications can be found here:

<https://dblp.org/pid/207/1665.html>

<https://scholar.google.com/citations?user=OsiW8D0AAAAJ&hl>

<https://www.scopus.com/authid/detail.uri?authorId=57200419758>

The following bibliometric information are updated to September 22, 2022:

	Google Scholar	Scopus
Citations	128	57
h-index	7	5
i10-index	5	3

# Simone Lenti

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## LIST OF PUBLICATIONS

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### International Journals

- J1. Marco Angelini, Graziano Blasilli, Simone Lenti, Alessia Palleschi, and Giuseppe Santucci. Effectiveness Error: Measuring and Improving RadViz Visual Effectiveness. *IEEE Transactions on Visualization and Computer Graphics*, Early Access:1–17, 2021
- J2. Marco Angelini, Graziano Blasilli, Tiziana Catarci, Simone Lenti, and Giuseppe Santucci. Vulnus: Visual Vulnerability Analysis for Network Security. *IEEE Transactions on Visualization and Computer Graphics*, 25(1):183–192, January 2019
- J3. Marco Angelini, Silvia Bonomi, Simone Lenti, Giuseppe Santucci, and Stefano Taggi. MAD: A Visual Analytics Solution for Multi-step Cyber Attacks Detection. *Journal of Computer Languages*, 52:10–24, June 2019

### International Conferences and Workshops

- C1. Marco Angelini, Graziano Blasilli, Silvia Bonomi, Simone Lenti, Alessia Palleschi, Giuseppe Santucci, and Emiliano De Paoli. BUCEPHALUS: A BUssiness CEntric cybersecurity Platform for proActive anaLysis Using visual analyticS. In *Proceedings of the 2021 IEEE Symposium on Visualization for Cyber Security (VizSec)*, pages 15–25. IEEE, October 2021
- C2. Graziano Blasilli, Emiliano De Paoli, Simone Lenti, and Sergio Picca. Lessons Learned while Supporting Cyber Situational Awareness. In *Proceedings of the 13th EuroVis Workshop on Visual Analytics (EuroVA '21)*, page 5. The Eurographics Association, 2021
- C3. Emmanouil G. Spanakis, Silvia Bonomi, Stelios Sfakianakis, Giuseppe Santucci, Simone Lenti, Mara Sorella, Florin D. Tanasache, Alessia Palleschi, Claudio Ciccotelli, Vangelis Sakkalis, and Sabina Magalini. Cyber-attacks and Threats for Healthcare – a Multi-layer Thread Analysis. In *Proceedings of the 42nd Annual International Conference of the IEEE Engineering in Medicine Biology Society (EMBC '20)*, pages 5705–5708. IEEE, July 2020
- C4. Marco Angelini, Graziano Blasilli, Simone Lenti, Alessia Palleschi, and Giuseppe Santucci. CrossWidgets: Enhancing Complex Data Selections through Modular Multi Attribute Selectors. In *Proceedings of the International Conference on Advanced Visual Interfaces (AVI '20)*, pages 1–9, New York, NY, USA, September 2020. Association for Computing Machinery. **AVI 2020**

### Honorable Mention

- C5. Marco Angelini, Graziano Blasilli, Lorenzo Farina, Simone Lenti, and Giuseppe Santucci. NEMESIS (NETwork MEDicine anaLySIS): Towards Visual Exploration of Network Medicine Data. In *Proceedings of the 14th International Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications (IVAPP '20)*, volume 3, pages 322–329. SciTePress, June 2020
- C6. Marco Angelini, Graziano Blasilli, Luca Borzacchiello, Emilio Coppa, Daniele Cono D'Elia, Camil Demetrescu, Simone Lenti, Simone Nicchi, and Giuseppe Santucci. SymNav: Visually Assisting Symbolic Execution. In *Proceedings of the 2019 IEEE Symposium on Visualization for Cyber Security (VizSec)*, pages 1–11. IEEE, October 2019
- C7. Marco Angelini, Graziano Blasilli, Simone Lenti, Alessia Palleschi, and Giuseppe Santucci. Towards Enhancing RadViz Analysis and Interpretation. In *Proceedings of the 2019 IEEE Visualization Conference (VIS)*, pages 226–230. IEEE, October 2019
- C8. Marco Angelini, Silvia Bonomi, Emanuele Borzi, Antonella Del Pozzo, Simone Lenti, and Giuseppe Santucci. An Attack Graph-based On-line Multi-step Attack Detector. In *Proceedings of the 19th International Conference on Distributed Computing and Networking (ICDCN '18)*, ICDCN '18, pages 1–10, Varanasi, India, January 2018. Association for Computing Machinery
- C9. Marco Angelini, Graziano Blasilli, Pietro Borrello, Emilio Coppa, Daniele Cono D'Elia, Serena Ferracci, Simone Lenti, and Giuseppe Santucci. ROPMate: Visually Assisting the Creation of ROP-based Exploits. In *Proceedings of the 2018 IEEE Symposium on Visualization for Cyber Security (VizSec)*, pages 1–8, Berlin, Germany, October 2018. IEEE. **VizSec 2018 Best Paper**
- C10. Marco Angelini, Graziano Blasilli, Simone Lenti, and Giuseppe Santucci. STEIN: Speeding Up Evaluation Activities with a Seamless Testing Environment INtegrator. In *EuroVis 2018 - Short Papers*. The Eurographics Association, 2018
- C11. Marco Angelini, Graziano Blasilli, Simone Lenti, and Giuseppe Santucci. Guess What I Want: I am in Hurry and I am Using my Phone while Driving. In *Proceedings of the 22nd International Conference Information Visualisation (IV '18)*, pages 139–144. IEEE, July 2018
- C12. Marco Angelini, Graziano Blasilli, Simone Lenti, and Giuseppe Santucci. Visual Exploration and Analysis of the Italian Cybersecurity Framework. In *Proceedings of the 2018 International Conference on Advanced Visual Interfaces, AVI '18*, pages 1–3, Castiglione della Pescaia, Grosseto, Italy, May 2018. Association for Computing Machinery

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- C13.** Marco Angelini, Leonardo Aniello, Simone Lenti, Giuseppe Santucci, and Daniele Ucci. The Goods, the Bads and the Ugliers: Supporting Decisions in Malware Detection through Visual Analytics. In *Proceedings of the 2017 IEEE Symposium on Visualization for Cyber Security (VizSec)*, pages 1–8, Phoenix, AZ, USA, October 2017. IEEE
- C14.** Marco Angelini, Simone Lenti, and Giuseppe Santucci. CRUMBS: A Cyber Security Framework Browser. In *Proceedings of the 2017 IEEE Symposium on Visualization for Cyber Security (VizSec)*, pages 1–8, Phoenix, AZ, USA, October 2017. IEEE

## Peer-reviewed Posters

- P1.** Graziano Blasilli, Simone Lenti, and Alessia Palleschi. CrossWidget: A D3.js Plugin to Support Multiple Scented Cross Filtering Activities. In *EuroVis 2019 - Posters*. The Eurographics Association, 2019

According to law 679/2016 of the Regulation of the European Parliament of April 27, 2016, I hereby express my consent to process and use my data provided in this CV.

Roma. September 22, 2022

*Simone Lenti*