

Simone Silvestri – Curriculum Vitae

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Employment History

2017 - Present Assistant Professor
Department of Computer Science
University of Kentucky

2014 - 2017 Assistant Professor
Department of Computer Science
Missouri University of Science and Technology

2012 - 2014 Post-Doctoral Research Associate
Department of Computer Science and Engineering
Pennsylvania State University

2010 - 2012 Post-Doctoral Research Associate
Department of Computer Science
Sapienza University of Rome

Education

2010 Ph.D. in Computer Science
Department of Computer Science
Sapienza University of Rome, Italy

2006 Laurea cum Laude in Computer Science
Department of Computer Science
Sapienza University, Italy

Summary of achievements

■ Publications summary

- More than ten publications in international journals, including: IEEE Transactions on Network and Service Management, IEEE Transactions on Mobile Computing, ACM Transactions on Sensor Networks.
- More than thirty publications international conferences, including: IEEE INFOCOM, IEEE ICDCS and IEEE ICNP.

■ Grants summary

- Total Federal Grants: \$1,736,871; My Share: \$890,952.
- Funding sources include NSF, NIFA, NATO and DTRA.

■ Awards

- Outstanding contribution in reviewing, Elsevier Computer Networks, 2015
- Italian Qualification as Associate Professor in Computer Science (01/B1), April 2014
- Best paper award, IEEE International Conference on Network Protocols (ICNP) 2009. IEEE ICNP is one of the most prestigious conferences in communication networks.
- Best student paper award, Sapienza University, 2009.

Research Interests

My recent research interests focus on exploiting machine learning techniques to integrate social behavioral science models into the design and control of cyber-physical-human systems. I am also investigating the vulnerabilities of interdependent cyber-physical systems, with particular emphasis on the Smart Grid. Furthermore, I am studying the multi-disciplinary problem of using unmanned aerial vehicles to monitor the effects of climate change in large-scale crop fields and in homeland security scenarios.

Research grants

PI (60%) - NIFA - as part of NSF Cyber-Physical Systems

"Integration of Social Behavioral Modeling for Smart Environments to Improve the Energy Efficiency of Smart Cities".
Amount awarded: \$802'981\$. (Feb. 2017 - Feb. 2020).

PI (100%) - NSF EPSCoR funded Missouri Transect

"Autonomous Monitoring of Large Scale Agricultural Plants Through Unmanned Aerial Vehicles".
Amount awarded: 71'055\$. (Aug. 2015 - Jul. 2019).

Co-PI (30%) - NSF Cyber-Physical Systems

"Securing Smart Grid by Understanding Communications Infrastructure Dependencies".
Amount awarded: 263'659\$. (Sep. 2015 - Aug. 2018).

Co-Director (22%) - NATO Science For Peace and Security

"SPS G4936 Hybrid sensor networks for emergency critical scenarios".
Total amount awarded 400'000€. (Sep. 2015 - Aug. 2018).

PI (100%) - Defense Threat Reduction Agency (DTRA), subcontract Pennsylvania State University

"Analysis and recovery of large-scale failures in interdependent networks".
Amount awarded: 162'540\$. (Nov. 2014 - May. 2016).

List of publications

Note that, for papers written with my Italian collaborators, author names are in alphabetical order, due to the prevailing Italian practice.

Book Chapters

- [1] S. Silvestri, B. Holbert, P. Novotny, T. La Porta, A. Wolf and A. Swami,
"Inferring Network Topologies in MANETs: Application to Service Redeployment"
in *Advances in Computer Communications and Networks - from green, mobile, pervasive networking to big data computing*, River Publisher, December 2016, ISBN: 9788793379879.

Journals

- [14] N. Bartolini, S. Ciavarella, S. Silvestri, T. La Porta,
"On critical service recovery after massive network failures"
in *IEEE Transactions on Networking* (to appear).
- [13] N. Bartolini, T. Calamoneri, S. Ciavarella, S. Silvestri, T. La Porta,
"Autonomous mobile sensor placement in complex environments"
in *ACM Transactions on Autonomous and Adaptive Systems*, Volume 12, Issue 2, 2017.

- [12] S. Silvestri, K. Goss,
"MobiBar: an autonomous deployment algorithm for barrier coverage with mobile sensors"
in Elsevier Ad Hoc Networks, Vol. 54, pp. 111-129, 2017.
- [11] M. Lin, S. Silvestri, N. Bartolini, T. La Porta,
"Selective Activation in Dense Femtocell Networks"
in IEEE Transactions on Wireless Communications, Vol. 15, Issue 10, pp. 7018 - 7029, 2016.
- [10] S. Ciavarella, J.-Y. Joo, S. Silvestri,
"Managing Contingencies In Smart Grids Via The Internet Of Things"
in IEEE Transactions on Smart Grid, Vol. 7, Issue 4, pp. 2134-2141, 2016
- [9] N. Bartolini, S. Ciavarella, S. Silvestri, T. La Porta,
"On the vulnerabilities of the Voronoi-based approach to mobile sensor deployment"
in IEEE Transactions on Mobile Computing, Vol. 15, Issue 12, 2016.
- [8] B. Holbert, S. Tati, S. Silvestri, T. La Porta, A. Swami,
"Network Topology Inference with Partial Path Information"
in IEEE Transactions on Network and Service Management, Vol. 12, Issue 1, 2015.
- [7] N. Bartolini, G. Bongiovanni, T. La Porta, S. Silvestri,
"On the vulnerabilities of the virtual force approach to mobile sensor deployment"
in IEEE Transactions on Mobile Computing, Vol. 13, Issue 11, 2014.
- [6] N. Bartolini, A. Massini, S. Silvestri,
"P&P: an Asynchronous and Distributed Protocol for Mobile Sensor Deployment"
in Springer Wireless Networks Journal, Vol. 18 Issue 4, page 381, 2012.
- [5] N. Bartolini, T. Calamoneri, T. La Porta, C. Petrioli, S. Silvestri,
"Sensor Activation and Radius Adaptation (SARA) in Heterogeneous Sensor Networks"
in ACM Transactions on Sensor Networks, Vol. 8, Issue 3, page 24, 2012.
- [4] N. Bartolini, T. Calamoneri, T. La Porta, S. Silvestri
"Autonomous deployment of heterogeneous mobile sensors"
in IEEE Transactions on Mobile Computing, Vol. 10, no. 6, page 753, 2011.
- [3] N. Bartolini, T. Calamoneri, A. Massini, S. Silvestri,
"On adaptive density deployment to mitigate the sink-hole problem in mobile sensor networks"
in Springer Mobile Networks and Applications, Vol. 16, Issue 1, page 134, 2011.
- [2] N. Bartolini, T. Calamoneri, E. G. Fusco, A. Massini, S. Silvestri,
"Push&Pull: autonomous deployment of mobile sensors for a complete coverage"
in Springer Wireless Networks Journal, Vol. 16, no. 3, Page 607, 2010.
- [1] N. Bartolini, G. Bongiovanni, S. Silvestri,
"Self-* through self-learning: overload control for distributed web systems"
in Elsevier Computer Networks, Vol. 53, no. 5, page 727, 2009.

Proceedings of International Conferences and Workshops

- [31] F. B. Sorbelli, S. K. Das, C. M. Pinotti, S. Silvestri,
"Precise Localization in Sparse Sensor Networks using a Drone with Directional Antennas"
in the ACM International Conference on Distributed Computing and Networking (ICDCN 2018)
- [30] V. K. Shah, S. Bhattacharjee, S. Silvestri, S. K. Das,
"Designing Sustainable Smart Connected Communities using Dynamic Spectrum Access via Band Selection"
in the ACM International Conference on Systems for Energy-Efficient Built Environments (BuildSys 2017)
- [29] K. Goss, R. Musmeci, S. Silvestri,
"Realistic Models for Characterizing the Performance of Unmanned Aerial Vehicles"
in the IEEE International Conference on Computer Communications and Networks (ICCCN 2017)

- [28] S. Silvestri, D. Baker, V. Dolce,
“Integration of Social Behavioral Modeling for Energy Optimization in Smart Environments”
in the ACM International Workshop on Social Sensing (SocialSense 2017)
- [27] V. Shah, S. Roy, S. Silvestri and S. K. Das,
“CTR: Cluster based Topological Routing for Disaster Response Network”
in the IEEE International Conference on Communications (ICC 2017)
- [26] S. Bhattacharjee, A. Thakur, S. Silvestri and S. K. Das,
“Statistical Security Incident Forensics against Data Falsification in Smart Grid Advanced Metering Infrastructure”
in ACM Conference on Data and Applications Security and Privacy (CODASPY 2017)
- [25] N. Bartolini, S. Ciavarella, S. Silvestri, T. La Porta,
“Network recovery after massive failures”
in IEEE/IFIP International Conference on Dependable Systems and Networks (DSN 2016)
Acceptance rate: 20%
- [24] S. Silvestri,
“Providing Ubiquitous Wireless Connectivity in Smart Cities through Dense Small Cell Deployment”
in IEEE Smart Cities Workshop-Kansas City 2016, position paper
- [23] A. Sturaro, S. Silvestri, M. Conti, Sajal K. Das,
“Towards a realistic model for failure propagation in interdependent networks”
in IEEE International Conference on Computing, Networking and Communications (ICNC 2016)
- [22] M. Lin, S. Silvestri, N. Bartolini, T. La Porta,
“Energy-Efficient Selective Activation in Femtocell Networks”
in IEEE International Conference on Mobile Ad-hoc and Sensor Systems (MASS 2015)
Acceptance rate: 26%
- [21] S. Silvestri, B. Holbert, P. Novotny, T. La Porta, A. Wolf and A. Swami,
“Inferring Network Topologies in MANETs Applied to Service Redeployment”
in IEEE International Conference on Computer Communication and Networks (ICCCN 2015)
Acceptance rate: 25%
- [20] S. Silvestri, R. Uргаonkar, M. Zafer, B. Ko,
“An online method for minimizing network monitoring overhead”
in IEEE International Conference on Distributed Computing Systems (ICDCS 2015)
Acceptance rate: 12.8%
- [19] B. Holbert, S. Tati, S. Silvestri, T. La Porta, A. Swami,
“Network Topology Inference with Partial Path Information”
in IEEE International Conference on Computing, Networking and Communications (ICNC 2015)
- [18] S. Tati, S. Silvestri, T. He, T. La Porta,
“Robust Network Tomography in the Presence of Failures”
in IEEE International Conference on Distributed Computing Systems (ICDCS 2014)
Acceptance rate: 13%
- [17] N. Bartolini, G. Bongiovanni, T. La Porta, S. Silvestri, F. Vincenti,
“Voronoi-based Deployment of Mobile Sensors in the Face of Adversaries”
in IEEE International Conference on Communications (ICC 2014)
- [16] B. Holber, S. Tati, S. Silvestri, A. Swami, T. La Porta,
“Effects of Partial Topology on Fault Diagnosis”
in IEEE Military Communications Conference (MILCOM 2013)
- [15] N. Bartolini, G. Bongiovanni, T. La Porta, S. Silvestri,
“On the security vulnerabilities of the virtual force approach to mobile sensor deployment”
in IEEE Conference on Computer Communications (INFOCOM 2013)
Acceptance rate: 17.4%

- [14] S. Silvestri,
“MobiBar: Barrier Coverage with Mobile Sensors”
in IEEE Global Communications Conference (GLOBECOM 2011)
Acceptance rate: 36.6%
- [13] N. Bartolini, T. Calamoneri, T. La Porta, S. Silvestri,
“Mobile sensor deployment in unknown fields”
in IEEE Conference on Computer Communications (INFOCOM mini-conference 2011)
- [12] L. Benini, D. Brunelli, C. Petrioli, S. Silvestri,
“GENESI: Green sEnsor NETworks for Structural monItoring”, (Poster)
in IEEE Conference on Sensor, Mesh and Ad Hoc Communications and Networks (SECON 2010)
- [11] N. Bartolini, T. Calamoneri, T. La Porta, A. Massini, S. Silvestri,
“Autonomous deployment of heterogeneous mobile sensors”
in IEEE Conference on Network Protocols (ICNP 2009) - **Best paper award**
Acceptance rate: 18.2%
- [10] E. Gelenbe, S. Silvestri,
“Optimisation of Power Consumption in Wired Packet Networks”
in ICST Workshop on Advanced Architectures and Algorithms for Internet
DElivery and Applications (AAA-IDEA 2009)
- [9] E. Gelenbe, S. Silvestri,
“Reducing Power Consumption In Wired Networks”
in IEEE Symposium on Computer and Information Sciences (ISCIS 09)
- [8] N. Bartolini, A. Massini, S. Silvestri,
“P&P protocol: local coordination of mobile sensors for self-deployment”
in ACM Conference on Modeling Analysis and Simulation of Wireless and Mobile Systems (MSWIM 2009)
Acceptance rate: 23.5%
- [7] N. Bartolini, T. Calamoneri, A. Massini, S. Silvestri,
“Variable density deployment and topology control for the solution of the sink-hole problem”
in ICST Conference on Heterogeneous Networking for Quality, Reliability,
Security and Robustness (QShine 2009)
- [6] N. Bartolini, T. Calamoneri, E. G. Fusco, A. Massini, S. Silvestri,
“Autonomous deployment of self-organizing mobile sensors for a complete coverage”
in IEEE Workshop on Self-Organizing Systems (IWSOS 2008)
- [5] N. Bartolini, G. Bongiovanni, S. Silvestri,
“Self-* overload control for distributed web systems”
in IEEE Workshop on Quality of Service (IWQoS 2008)
Acceptance rate: 35.6%
- [4] N. Bartolini, T. Calamoneri, E. G. Fusco, A. Massini, S. Silvestri,
“Snap Spread: a self-deployment algorithm for mobile sensor networks”, (short paper)
in IEEE Conference on Distributed Computing in Sensor Systems (DCOSS 2008)
- [3] N. Bartolini, G. Bongiovanni, S. Silvestri,
“An autonomic admission control policy for distributed web systems”
in IEEE/ACM Symposium on Modeling, Analysis, and Simulation of Computer and
Telecommunication Systems (MASCOTS 2007). Acceptance rate: 33.2%
- [2] N. Bartolini, G. Bongiovanni, S. Silvestri,
“Distributed Server Selection and Admission Control in Replicated Web Systems”
in IEEE Symposium on Parallel and Distributed Computing, (ISPDC 2007)
- [1] N. Bartolini, G. Bongiovanni, S. Silvestri,
“An Adaptive Admission Control Policy for Geographically Distributed Web Systems”
in ACM Conference on Scalable Information Systems (INFOSCALE 2007)

Invited Seminars

[2017] “Social-Behavioral Aware Optimization of Cyber Physical Systems”
University of Louisville - Informs.

[2017] “Social-Behavioral Aware Optimization of Cyber Physical Systems”
Los Alamos National Laboratory (LANL).

Teaching activity

Fall 2017	CS-685 Cognitive Computing	Graduate level
Spring 2017	CS-2500 Algorithms	Undergraduate level
Spring 2016	CS-6001 Complex networked systems	Graduate level
Fall 2015	CS-2500 Algorithms	Undergraduate level
Spring 2015	CS-6001 Complex networked systems	Graduate level
Fall 2014	CS-2500 Algorithms	Undergraduate level

Student Advising

Graduated students

Maria Angelin - MSTM.S. Graduated Summer 2017
Thesis title : “Multi Stage Recovery from Large Scale Failures in Interdependent Networks”

Current students

Spring 2014	Vijay Shah - UK	Ph.D. Student, Co-Advised with Dr. Sajal Das
Fall 2017	Joedocei Hill - UK	M.S. Student
Fall 2016	Ruoxi Zhang - MST	M.S. Student
Spring 2016	Zachary Bahr - MST	Undergraduate Student
Spring 2017	Sara Newman - MST	Undergraduate Student

Visiting students

Spring 2017	Enrico Casella	Visiting Ms.S Student, University of Palermo, Italy
Fall 2016	Valeria Dolce	Visiting Ms.S Student, University of Palermo, Italy
Spring 2016	Riccardo Musmeci	Visiting Ms.S Student, University of Palermo, Italy
Spring 2015	Stefano Ciavarella	Visiting Ph.D. Student, Sapienza University, Italy
Spring 2015	Agostino Sturaro	Visiting Ms.S Student, Padua University, Italy
2008 - Present	Co-supervisor of more than ten B.S. and M.S. theses.	

Professional activities

Proposal reviewer

National Science Foundation panelist

Natural Sciences and Engineering Research Council of Canada (NSERC)

Defense Threat Reduction Agency (DTRA)

Russian government program Attracting leading scientists to Russian universities

Conference organization

2016 Program Co-Chair of the IEEE PerCom Workshop IQ2S

2009 Publicity Chair of ICST QShine

2009 Publicity Chair of ICST AAA-IDEA

Technical Program Committees (TPC) - partial list

IEEE WoWMOM 2018

IEEE INFOCOM 2018, 2017, 2016

IEEE VTC 2018

IEEE 5G World Forum 2018

IEEE MILCOM 2017, 2016

IFIP Wireless Days 2018, 2017, 2016

IEEE SECON 2016

IEEE ICC 2018, 2017, 2016, 2014, 2013, 2012

EAI S-Cube 2017, 2016, 2015

IEEE ICCCN 2015

IEEE ICNP 2015, 2014

IEEE LCN 2017, 2016, 2015

IEEE ICNC 2017, 2016, 2014, 2012

MobiSPC 2016, 2015

IEEE GLOBECOM 2017, 2016, 2014, 2013, 2012, 2011, 2010

IEEE SMARTCOMP 2018, 2017, 2016, 2014

IEEE WiSARN 2018, 2017, 2014

SENSORCOMM 2014, 2013, 2012, 2011, 2010

ICNS 2013, 2012

Editorial Boards

IARIA International Journal Advances in Internet Technology

IARIA International Journal Advances in Systems and Measurements

List of Collaborators - partial list

Novella Bartolini (Sapienza University, Italy)

Giancarlo Bongiovanni (Sapienza University, Italy)

Tiziana Calamoneri (Sapienza University, Italy)

Mauro Conti (Padua University, Italy)

Sajal K. Das (Missouri S&T, USA)

Erol Gelenbe (Imperial College, UK)

Ting He (IBM T.J. Watson Research Center, USA)

Jhi-Young Joo (Missouri S&T, USA)

Krishna Kant (Temple University, USA)

Ala Khalifeh (German Jordanian University, Jordan)

Bong Jun Ko (IBM T.J. Watson Research Center, USA)

Thomas La Porta (Pennsylvania State University, USA)

Petr Novotny (Imperial College, UK)

Ananthram Swami (Army Research Lab, USA)

Srikar Tati (Ericsson, USA)

Rahul Uргаonkar (Amazon, USA)

Alexander Wolf (Imperial College, UK)

Murtaza Zafer (Samsung Research America, USA)

Journal reviewer - partial list

ACM Transactions on Sensor Networks

IEEE Transactions on Mobile Computing

Elsevier Journal of Parallel and Distributed Computing

IEEE Transactions on Parallel and Distributed Systems

Elsevier Computer Networks

Elsevier Computer Communications

ACM/Springer Wireless Networks

Oxford Computer Journal

ACM Transactions on Internet Technology

Journal of Sensors

Department service

2016 Undergraduate Committee

2015 Faculty Search Committee

2015-2016 Colloquia Coordinator

2015-2016 Peer Teaching Evaluation Committee