

Michele RUSSO

PhD, Associate Professor, University of Roma Sapienza

CURRENT POSITION

Associate Professor of Representation (IT - SC 08/E1, SSD ICAR/17) with national qualification as Full Professor (2021-2032)

Department of History, Representation and Restoration of Architecture (DSDRA), University of Roma Sapienza, Faculty of Architecture since 2019.

PREVIOUS POSITIONS

- **Assistant Professor** (IT – RTD/B) University of Roma Sapienza (2016-2019)
- **Research Fellow** (IT – RTD/A) Politecnico di Milano (2011-2015)

EDUCATION

- **Ph.D. in Representation** (IT – Disegno) at Politecnico di Milano, Italy, 2007.
Thesis: *Survey of complex shapes by Integrated Reverse Modeling* (Advisors: Prof. G. Guidi, J.-A. Beraldin)
- **Master Degree in Architecture** cum laude at University of Ferrara, Italy, 2002.
Thesis: *Composed beams in Renaissance Ferrara: cognitive investigations and intervention proposals* (Advisors: Prof. C. Alessandri, R. Fabbri)

CURRENT RESEARCH INTERESTS

Authors of more than 150 publications in the 3D imaging domain, he is interested in:

- Integrated multi-resolution 3D imaging for representation and architecture and design analysis.
- Reconstruction of reality-based and reconstructive virtual models of existing or lost architectures.
- Multimedia photogrammetry, semantic modelling, HBIM
- AR/VR/AI for Cultural Heritage.

PI IN RESEARCH PROJECTS

2023-2025 - *INFORTREAT. Reconstructing the Early Modern bastioned front. Information models for the fruition of constructive knowledge in FORTified architecture TREATises (16th-18th Century): a new integrated analysis tool for the interpretation, restoration and maintenance of Early Modern fortified heritage* - PRIN 2022 National Project.

Sapienza Leader: prof. M. Russo / National Project Leader: prof. M.G. Bevilacqua (Pisa)

2023-2024 - *Hybrid photogrammetry: metrological experimentation on the acquisition of semi-submerged or submerged artefacts in shallow water with out-of-water cameras*, framed in Sapienza Project medium funding 2022.

2021-2022 - *Augmented Reality for Active Learning in Representation*, framed in Sapienza Project medium funding 2022.

2019-2020 - *From optical camera to photomodelling with drones: tools between past, present and future to support architectural representation for geometric and photometric analysis of architectural façades in urban contexts*, framed in Sapienza Project small funding 2018.

2018-2019 - *Surveying for knowledge, conservation and valorisation: the case of the Este delizia del Verginese (Ferrara)*, framed in Sapienza Project small funding 2017.

PARTICIPATION IN MAIN RESEARCH PROJECTS

National:

2024-2025 - *MUSE - MUseum management, enhancement and accessibility: a Sustainable digital Ecosystem of interactive digital collections*, framed in Ateneo di Roma Sapienza Project big funding.
Sapienza Leader: prof. E. Ippoliti

2023-2025 - *Phyigital Twin Technologies for innovative Surgical Training & Planning*, framed in Ateneo di Roma Sapienza “Rome Technopole” 2022
Sapienza Leader: prof. L. Di Lucchio

2018-2020 - *3ReaD Project* framed in POR FESR Lazio 2014-2020 in collaboration with Sapienza University, Link Campus University, Coravallis and Teleconsys companies.
Sapienza Leader: prof. C. Bianchini/ Project Leader: G. Corazzon

2011-2013 - *TIVAL Project on Certosa of Pavia* based on framework agreement between Lombardy Region and the Universities of Pavia, Bicocca, Statale and Politecnico di Milano.
Politecnico Leader: prof. G. Guidi / Project Leader: prof.sa C. Simone

2007-2007 - *Pompeii Forum Project* in collaboration with Politecnico di Milano, ARCUS company, Soprintendenza Speciale ai Beni Archeologici di Napoli e Pompei, Scuola Normale Superiore di Pisa, FBK Foundation, ETH of Zurich, Parthenope University.
Politecnico Leader: prof. M. Gaiani/G. Guidi / Project Leader: prof. B. Benedetti

2002-2006 - National co-financing (COFIN 2002 and 2004) about integrated surveying methods and techniques for the construction and use of virtual architecture and urban 3D models
Local Leader: prof. M. Gaiani (Politecnico di Milano) / Project Leader: prof. M. Docci (Sapienza)

International

2013-2015 - *3D-ICONS Project* EU Project “ICT Policy Support Programme” (Call CIP-ICT-PSP-2011-5, Pilot Type B - CIP-ICT-PSP-PB) for image-based massive survey of museum collections.
Politecnico Leader: prof. G. Guidi / Project Leader. prof. F. Nicolucci

2010-2012 - *Ewec Archaeosites Project* (2010-2012) in collaboration with Politecnico di Milano, Leric Foundation, ICM of Hanoi about a portion of archaeological site of My Son.
Politecnico Leader: prof. G. Guidi / Project Leader. prof. M. Boriani

2004-2006 - *Rome Reborn Project* in collaboration with Politecnico di Milano, University of Florence, IATH (Virginia, USA) and UCLA (California, USA) on the urban model of Roma Costantiniana.
Politecnico Leader: prof. G. Guidi / Project Leader. Bernard Frisher

TEACHING EXPERIENCE

(Design Faculty, Politecnico di Milano¹ - Architecture Faculty, Sapienza University²):

Design & Graphic Languages Studio² (2nd level – 2nd year course)

Methods of digital representation and modelling² (2nd level – 1st year course)

Product Representation² (2nd level – 1st year course)

Drawing² (1st level – 1st year course)

Computer Graphics¹ (1st level – 2nd year course)

Digital Representation¹ (1st level – 2nd year course)

Project tools and methods¹ (1st level – 1st year course)

Advisor of several Master, Bachelor, PhD thesis.

Reviewer of many national and international conferences and journals.

Visiting Professor at the International Research Institute Visual Information Technology (VIT) Center of the National Research Council (Canada).

Guest Editor of:

2021 - *DisegnareCON Journal* - Issue "Semantic-driven analysis and classification in architectural heritage" - (with L. De Luca)

2021 - *MDPI Applied Science Journal* - Special Issue "Innovative Solutions for Augmented and Virtual Reality Applications" - (with M. Torres Vega)

Member of the International Journals Scientific/Reviewer Board:

2024 (since) - DisegnareCON

2023 (since) - Architecture, Drawing, Art, and Modeling (ADAM)

2022 (since) - Frontiers in Virtual Reality Journal

2022 (since) - International Journal of Architecture, Art and Design (Agathon)

2020 (since) - MDPI Geo-Information Journal

SCIENTIFIC ASSOCIATIONS/AWARDS

2023 (since) - CIPA Heritage Documentation - *Expert Member*

2022 (since) - REpresentation Advances And CHallenges APS (REAACH) - *Secretary & Board of Director Member, founder of the Association.*

2017 (since) - VSMM – Virtual System and MultiMedia - *Secretary & Board of Directors member*

2011 (since) - UID – Unione Italiana del Disegno – *Ordinary member*

2023 - FortMED Best Full Paper Award in the category "Digital Heritage" for the article "A 3D integrated survey of fortified architectures: the medieval Canossa castle", The International Conference on Fortifications of the Mediterranean Coast (FortMED 2023), Pisa, Italy.

2008 - EG Best Paper Award for the article "3D modeling of large and complex site using multi-sensor integration and multi-resolution data", The 9th International Symposium on Virtual Reality, Archaeology and Intelligent Cultural Heritage (VAST 08), Eurographic Association, Braga, Portugal

2008 - VSMM Best Paper Award for the article "A multi-resolution methodology for archeological survey: the Pompeii Forum", 16th Intern. Conference on Virtual Systems and MultiMedia (VSMM), Limassol, Cyprus, October 2008

SELECTION OF 20 PUBLICATIONS

1. Russo, M., Spallone, R., Senatore, L.J., Flenghi, G., Morozzi, L. (2023). Integrated 3D acquisition of complex wooden artefacts: The Piffetti's library in Quirinale palace (Rome). In International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, XLVIII-M-2-2023: (2023). Documenting, Understanding, Preserving Cultural Heritage: Humanities and Digital Technologies for Shaping the Future (CIPA 2023 Florence), pp. 1379-1386. Link: www.doi.org/10.5194/isprs-archives-XLVIII-M-2-2023-1379-2023
2. Billi, D., Croce, V., Bevilacqua, M.G., Caroti, G., Pasqualetti, A., Piemonte, A., Russo, M. 2023. Machine Learning and Deep Learning for the Built Heritage Analysis: Laser Scanning and UAV-Based Surveying Applications on a Complex Spatial Grid Structure. *Remote Sensing*. 2023; 15(8):1961, pp. 1-34. ISSN: 2072-4292. Link: <https://doi.org/10.3390/rs15081961>
3. Russo, M., Panarotto, F., Flenghi, G., Russo, V., Pellegrinelli, A. 2022. Ultralight UAV for steep-hill archaeological 3D survey. *DisegnareCON*, Vol 15, No 29, pp. 3.1-3.17. ISSN: 1828-5961. <https://doi.org/10.20365/disegnarecon.29.2022.3>
4. Bevilacqua, M.G., Giordano, A., Russo, M., Spallone, R., 2022. 3D Reconstruction, Digital Twinning, and Virtual Reality: Architectural Heritage Applications. *IEEE VR Conference*, In 2022 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW) – virtual event, pp. 92-96, 2022. Link: <https://ieeexplore.ieee.org/document/9757457>
5. Russo, M. 2021. AR in the Architecture Domain: State of the Art. *Applied Sciences*, 11(15), 6800, pp. 1-38. Link: <https://doi.org/10.3390/app11156800>

6. Teruggi, S., Grilli, E., Russo, M., Fassi, F., Remondino, F., 2020. A Hierarchical Machine Learning Approach for Multi-Level and Multi-Resolution 3D Point Cloud Classification. *Remote Sensing*, 12, 2598. Link: <https://doi.org/10.3390/rs12162598>
7. Russo, M., Giugliano, A.M., Carnevali, L., 2020. The Illusory Architecture of the Camera di Giove in Sassuolo. *Nexus Netw J*, pp. 1-19. Link: <https://doi.org/10.1007/s00004-020-00503-2>
8. Carnevali, L., Lanfranchi, F., Russo, M., 2019. Built Information Modeling for the 3D Reconstruction of Modern Railway Stations. *Heritage* 2019, 2(3), 2298-2310. Link: <https://www.mdpi.com/2571-9408/2/3/141/pdf>
9. Russo, M., Menconero, S., and Baglioni, L.. 2019. Parametric surfaces for augmented architecture representation, In *International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, XLII-2/W9, 3DARCH, 6-8 Febbraio 2019, pp. 671-678. ISSN: 2194-9034. Link: <https://doi.org/10.5194/isprs-archives-XLII-2-W9-671-2019>
10. Russo, M., Giugliano, A.M., Ascutti, M., 2019. Mobile phone imaging for CH façade modelling. In *International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, LowCost 3D Conference*, 2-3 Dicembre 2019, Strasburgo, pp. 287-294. Link: <https://doi.org/10.5194/isprs-archives-XLII-2-W17-287-2019>
11. Russo, M., Carnevali, L., Russo, V., Savastano, D., Taddia, Y., 2018. Modelling and Deterioration Mapping of Façades in Historical Urban context by Close Range Ultra-Lightweight UAVs Photogrammetry. *International Journal of Architectural Heritage*, Vol. 13 (4), pp. 549-568. ISSN: 1558-3066. Link: <https://www.tandfonline.com/doi/full/10.1080/15583058.2018.1440030>
12. Russo, M., 2018. *Il Palazzo del Verginese: una Delizia Estense nascosta*. Collana Materiali e Documenti, 30, Sapienza Università Editrice, open access, 222 p. ISBN: 9788893770590. Link: http://www.editricesapienza.it/sites/default/files/5652_Russo_Palazzo_Verginese_OA.pdf
13. Carpiceci, M., Russo, M., Angelini, A., 2017. The digital model of the S. Zenone chapel inside Santa Prassede in Rome. A case study for the morphological analysis. In *International Conference on Virtual Systems and Multimedia (VSMM)*, 01-02 November 2017, Dublin, pp. 238-246. ISBN: 9781538644942.
14. Russo, M., Manfredini, A.M, 2015. Integrated multi-scalar approach for 3D Cultural Heritage acquisitions. In *Handbook of Research on Emerging Digital Tools for Architectural Surveying, Modeling, and Representation*, a cura di S. Brusaporci, IGI Global, pp. 337-360.
15. Guidi, G., Russo, M., Angheluddu, D., 2014. 3D Survey and virtual reconstruction of archaeological sites. *Digital Applications in Archaeology and Cultural Heritage*, 1(2014), pp. 55-69. Link: <http://www.sciencedirect.com/science/article/pii/S2212054814000022>
16. Russo, M., Remondino, F., Guidi, G., 2011. Principali tecniche e strumenti per il rilievo tridimensionale in ambito archeologico. *Archeologia e Calcolatori*, 22, Edizioni All'insegna del Giglio s.a.s., pp. 169-198. ISSN: 1120-6861, ISBN: 9788878145269. Link: http://soi.cnr.it/archcalc/indice/PDF22/AC_22_Russo_et_al.pdf
17. Russo, M., Guidi, G., 2011. Reality-based and reconstructive models: digital media for cultural heritage valorization. *SCIENTIFIC RESEARCH and INFORMATION TECHNOLOGY (SCIRES-IT)*, 2(4), CASPUR-CIBER Publishing, pp. 71-86. e-ISSN: 2239-4303. Link: <http://caspur-ciberpublishing.it/index.php/scires-it/article/view/9550/8919>
18. Guidi, G., Russo, M., Beraldin, J-A., 2010. *Acquisizione e modellazione poligonale*, McGraw Hill, Milano, 480 p. ISBN: 9788838665318. Link: <http://www.ateneonline.it/guidirusso/home.asp>
19. Guidi, G., Russo, M., Magrassi, G., Bordegoni, M., 2010. Performance evaluation of triangulation based range sensors. *Sensors*, Special Issue in Instrumentation, Signal Treatment and Uncertainty Estimation in Sensors, 10(8), pp. 7192-7215. ISSN: 1424-8220.
20. Guidi, G., Remondino, F., Russo, M., Menna, F., Rizzi, A., Ercoli, S., 2009. A multi-resolution methodology for the 3D modeling of large and complex archeological areas. In: *Special Issue in International Journal of Architectural Computing (IJAC)*, pp. 39-55. ISSN: 1478-0771.