

FRANCESCA ROSCINI

Dr Francesca Roscini

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https://www.researchgate.net/profile/Francesca_Roscini

Assistant Professor

Engineer. Registered member of the Engineers Board since 2011 (Perugia No. A4404)

- Member of SISCO 'Società Italiana di Scienza delle Costruzioni'
- Member of Rilem TC 290-IMC, TC 250-CSM, FIB T5.1, COST Action TU1207
- PhD, Civil Engineer, expert in structural retrofitting of existing buildings, design of construction in seismic area
- Technical evaluator of damaged structures after seismic events for Civil Protection Department
- Technical evaluator of cultural heritage usability (BC115)
- Lecturer; university teacher and tutor; assistant supervisor for BSc and MSc thesis projects; research
- Organizer and Speaker at international conferences
- Author of more than fifteen scientific papers.
- Reviewer and Editor of scientific papers



PROFESSIONAL EXPERIENCE

- 15th Dec 2022 – Today** **Assistant Professor in Civil Engineering ICAR/08 - Università degli Studi 'Niccolò Cusano'**
Title of the project: 'L.A.ST.ING., Long-term Assessment of innovative and sustainable system for STructural retrofitting'
- 1st Mar – 14th Dec 2022** **Postdoctoral Position in Civil Engineering - Università degli Studi 'Niccolò Cusano'**
Title of the project: 'Composite materials for structural retrofitting'
Supervisor: Prof. Barbara Ferracuti
- 1st Nov 2019 – 31st Oct 2021** **Postdoctoral Position in Structural Engineering: Marie Skłodowska Curie Actions Fellow – The University of Sheffield – Department of Civil and Structural Engineering**
Title of the project: 'GRE.A.T.E.R.S', GREEn Advanced TEchnologies for the Retrofitting of masonry Structures'- Cordis 846338
Supervisor: Dr. Maurizio Guadagnini
- Mar 2018 – Oct 2019** **Postdoctoral Position in Civil Engineering - Roma Tre University – Department of Engineering**
Analytical, numerical and experimental investigations on composite materials and strengthening systems.
Supervisor: Prof. Gianmarco de Felice
- Sept – Oct 2016** **Damage evaluation inspections on cultural heritage according to RELUIS coordination after 'Amatrice 2016' and 'Norcia 2016' seismic sequences - BC115**
- January 2016** **Fellowship award from COST Action TU1207 for FRP Training Course 'Reinforcing and strengthening of structures with FRP reinforcement' in Ghent University (B)**
- Oct 13 – Sept 14** **Scholarship at University of Perugia - Department of Civil and Environmental Engineering**
Research title: 'Evaluation of ductility and seismic performance of structural elements made of concrete of recycled aggregates.'
Research fields: seismic performance of concrete (via fatigue tests), energy efficiency solutions and low environmental impact, recycled aggregates
Main activities: scientific research.
- Experimental investigations on seismic performance of concrete of recycled aggregates.

- Post processing of test data
Tutor: Prof. Ing. A.L. Materazzi

Nov 11 – May 13
Freelance
Collaboration

Civil Engineer Firm Dr. Ing. Carlo Costantini PhD
Engineering Technical Society ‘CST Engineering’
Main responsibilities: Civil Engineer. Project management.
Main activities: Structural design of buildings and bridges in seismic prone areas. Energy efficiency solutions for buildings. Project management.

Jan 11 – Jul 11
Trainee

Investigation technical in office of civil engineering
County of Perugia – Regione Umbria
Main responsibilities: technical pre-investigation.
Main activities: seismic area designs checking, according to 2008 Construction Technical Italian Code

EDUCATION

1st Nov 2014 –
21st Feb 2018

PhD Student in Civil Engineering - Roma Tre University – Department of Engineering
Title of the PhD Thesis: ‘Strengthening of masonry vaults with Steel Reinforced Grout’
Research fields: rehabilitation of structures damaged by earthquakes with Externally Bonded Reinforcements (EBR) with composites. Evaluation of material bond behaviour and retrofitting effectiveness.
Main activities: scientific research.
- Experimental investigations on composite materials and strengthening systems.
- Post processing of test data, development of analytical relationships; development and validation of acceptance criteria for these strengthening systems, development of design approaches for the retrofitting of existing buildings with composite materials.
- Durability for ageing tests on composite materials and strengthening systems.
- Traditional and unconventional contact-less measurement methods (Digital Image Correlation), to improve the reliability of recorded data.
Tutor: Prof. Gianmarco de Felice
Supervisors: Prof. Gianmarco de Felice – Dr. Stefano De Santis – Dr. Maurizio Guadagnini

Apr 17 – June 17

Visiting PhD Student at ‘The University of Sheffield’
Main activities: scientific research.
- Experimental investigations;
- Post processing of test data
- International research
Tutor: Dr. Maurizio Guadagnini

Sept 07 - Dec 10

University of Perugia MSc Degree in Civil Engineering
Thesis: ‘Finite element models automatic updating via evolutionary algorithms: the new TV tower in Guangzhou (China) example’.
Research fields: testing and control of structural actions (Structural Health Monitoring), dynamic analysis by Finite Element models, structural rehabilitation
Supervisor: Prof. Filippo Ubertini

Sept. 03 - July 07

University of Perugia BSc Degree
Thesis: ‘S.R.G. (Steel Reinforced Grout) corrosion’.
Research fields: durability properties of S.R.G. by artificial ageing via mechanical characterization
Supervisor: Prof. Antonio Borri – Dr. Giulio Castori

Sept. 98 - Jul 03 Classical High School Degree ‘Francesco Stelluti’ – Fabriano, AN

SCHOLARSHIP, GRANTS, AWARDS

- 25th November 2022** Young Researcher Grant – DD 247 (€299,136.83)
Italian Ministry of University and Research Internationalization of Research Department
Title of the project: 'L.A.ST.ING., Long-term Assessment of innovative and sustainable system for STructural retrofitING'
- 12th February 2019** Marie Skłodowska Curie Actions Individual Fellowship Award – Call 2018 (€212,933.76)
- 20th July 2018** European contest winner for training project 2018-IPR-E-000-9724_JN 291030_FR
- 6th June 2018** Finalist (first 6 positions) for doctoral theses on innovation 'Ing. Dario Scapaticci': Nazionale Prize of the Mesap Smart Products and Manufacturing Innovation Pole – Turin
- May 2018** Winner of the International Galilei - Youth Award for Scientific Research, Italian Rotary Club and University of Pisa (€2,000.00)
- January 2018** CNR 'National Research Council' - Contest winner
- 5-7 Sept 2017** ACIC 2017 – Advanced Composite in Construction
8th International Conference
'Bond of Steel Reinforced Grout to curved masonry substrate'
F. Roscini, N. Trochoutsou, S. De Santis, G. De Felice, M. Guadagnini
2nd best poster award in presentation poster competition
- Apr 17 – June 17** Visiting PhD Student in 'The University of Sheffield'
- January 16** Fellowship Award from COST Action TU1207 for FRP Training Course 'Reinforcing and strengthening of structures with FRP reinforcement' in Ghent University (B) (€600.00)
- July 2003** Awards - Scholarships from Telecom Italia SpA (€1,000.00)

INVITED PRESENTATIONS (MAIN)

Since 2014: Speaker and Organizer at International Conferences and in international meetings of European COST Action TU1207, RILEM Technical Committee 290-IMC, RILEM Technical Committee 250-CSM.

- 27th – 30th Aug 2023** Engineering Mechanics Institute – 2023 International Conference
'Novel numerical approaches for the modelling of axial-symmetric masonry domes'
Francesca Roscini, Francesca Nerilli
- 23rd – 26th Jul 2023** 11th International Conference on FRP composites in Civil Engineering 'CICE' – Rio de Janeiro
'Numerical response of the cohesive law at the contact surface between natural yarns and lime-based mortar' – Francesca Roscini, Francesca Nerilli, Barbara Ferracuti and Maurizio Guadagnini
- 12th – 14th Jul 2023** XXIII Convegno Gruppo Italiano di Meccanica Computazionale – Reggio Calabria
'FE and IGA techniques for the analysis of the axial-symmetric masonry domes'
Francesca Roscini, Francesca Nerilli
- 8th – 10th Dec 2021** 10th International Conference on FRP composites in Civil Engineering 'CICE' – Istanbul (online event)
'Experimental evidences and numerical modelling of SRG systems under uniaxial load' – Francesca Roscini, Marialaura Malena and Gianmarco de Felice
- 24th – 26th Nov 2021** Mechanics Of Masonry Structures Strengthened With Composite Materials 'MuRiCo7' –

- Online conference
'Bond behavior of steel cords for SRG systems to cementitious and lime-based mortar' – Francesca Roscini and Maurizio Guadagnini
- 29th Sept - 1st Oct 2021** 12th International Conference On Structural Analysis of Historical Constructions 'SAHC' – Barcelona (online event)
'Overview of the mechanical properties of Steel Reinforced Grout systems for structural retrofitting' – Francesca Roscini, Stefano De Santis, Pietro Meriggi and Gianmarco de Felice
- 28 – 30 June 2021** 8th International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering 'COMPDYN' - Athens (online event)
'Experimental and numerical investigation of SRG bond behaviour via pull-out tests' – Francesca Roscini and Maurizio Guadagnini
- 22nd Sept 2021** 'ScuDo' Scuola di Dottorato – Doctoral School of 'Politecnico di Torino'
Il patrimonio costruito in muratura: percorsi di conoscenza e prospettive di ricerca per l'analisi e la riabilitazione strutturale, Corso di Eccellenza – 2a edizione
Invited Lecturer on 'Compositi SRG e NTRM per il rinforzo di strutture murarie'
Introduzione ai sistemi SRG e NTRM e alla loro caratterizzazione meccanica
Caratterizzazione dell'interazione fibra-matrice e comportamento di aderenza
Durabilità: metodi di prova, attività RILEM e linee guida
Applicazioni: rinforzo di strutture a volta e pannelli murari
- 31st Aug – 4th Sept 2020** 74th Rilem Week – Sheffield
Special Session Organizer on 'Advances in Textile Reinforced Mortars for Strengthening Applications', endorsed by the recently established RILEM TC IMC 'Durability of Inorganic Matrix Composites used for strengthening of masonry constructions'
'A critical assessment of current acceptance criteria for TRM strengthening systems' – Francesca Roscini, Niki Trochoutsou and Maurizio Guadagnini
- 14th May 2020** The Society for Earthquake & Civil Engineering Dynamics (SECED) – An Associated Society of the Institution of Civil Engineers (ICE)
YM SECED Committee
Invited Lecturer on 'Strengthening of Masonry Vaults with Steel Reinforced Grout'
- 15-19 Sept 19** XVIII Convegno ANIDIS. L'ingegneria sismica in Italia. Ascoli Piceno
Seismic risk mitigation in industrial plants with structural fastening systems
Daniele Corritore, Francesca Roscini, Davide Calisti
- 12-15 Jul 17** Prohitech 2017 – 3rd International Conference on Protection of Historical Construction - Lisbona (Portugal) 'Evaluation of the bond behaviour of steel reinforced grout applied to curved masonry substrate via bending tests'. F. Roscini, S. De Santis & G. De Felice
- 23th June 17** Research seminar in 'The University of Sheffield - Department of Civil and Structural Engineering' 'Retrofitting masonry vaults with TRM' – F. Roscini, S. De Santis & G. de Felice
- 19th May 17** Research seminar in 'The University of Sheffield - Department of Civil and Structural Engineering'. 'Evaluation of bond behaviour of FRM strengthening systems applied to masonry substrate via shear and bending tests' - F. Roscini, S. De Santis & G. de Felice
- 3th-5th Apr 17** COST Action TU1207 – Budapest (Hungary)
'Open Issues on the experimental setup in TRM-to-substrate shear bond tests'. F. Roscini, S. De Santis & G. de Felice

- 2nd-4th Nov 16** COST Action TU1207 – Prague (Czech Republic) ‘Evaluation of the bond behaviour of SteelReinforced Grout applied to curved masonry substrate via bending tests’ F. Roscini, S. De Santis & G. de Felice
- 12th -16th Sept 16** SAHC 2016 – Leuven (Belgium)
Roscini F., De Santis S., de Felice G., 2016, ‘Experimental investigation on the mechanical behaviour of mortar-based strengthening systems’, 10th International Conference on Structural Analysis of Historical Constructions (SAHC2016), 12-16 September 2016, Leuven, Be.
- 7th Nov 14** Ecomondo: 18° Fiera Internazionale del Recupero di Materia ed Energia e dello Sviluppo Sostenibile – 5/8 novembre 2014 – Rimini (Italia). ‘Investigation Of Stress – Strain Behaviour Of Recycled Aggregate Concrete Under Cyclic Loads’. Breccolotti M, D’Alessandro A, Roscini F, Bonfigli MF, Department of Civil and Environmental Engineering University of Perugia.

SOFTWARE SKILLS

Abaqus, Matlab, Autocad, SAP2000, Labview
WINDOWS and MACINTOSH: OFFICE
Ncorr code (D.I.C. = Digital Image Correlation)
GOM

SOFT SKILLS

- Project management
- Team building
- Motivation
- Human resources and financial budgets for research
- Creativity
- Adaptability
- Problem Solving
- Managing data and information
- IT applications and programming languages
- Writing reports
- Networking
- International experience

TEACHING, PARTICIPATION IN CONFERENCES AND PUBLICATIONS

Since 01/03/22 Lecturer in ‘Science of Constructions’ chair at Università degli Studi ‘Niccolò Cusano’

Since 2014 Co-author of papers, conference documents and panels in advanced materials for innovative solutions in building retrofitting topics.

Since 2014 Speaker, organizer and chair at International Conferences and in international meetings of European COST Action TU1207, RILEM Technical Committee 290-IMC, RILEM Technical Committee 250-CSM, FIBT5.1 and ACI 549 Committee.

Since 2012 Teaching as lecturer and tutor in ‘Constructions in Seismic Area’, in ‘Structural Rehabilitation’ and ‘Science of Constructions’ chairs at Roma Tre University; tutor in ‘Construction’ and ‘Science of Constructions’ chairs at E-Campus University; tutor in ‘Control, Testing and Structural Rehabilitation’ and ‘Design of steel and reinforced concrete structures’ chairs at University of Perugia.

- Assistant supervisor for students in BSc and MSc thesis at Roma Tre University and University of Perugia.
- Seminar research lecturer at University of Sheffield (UK).

LANGUAGE SKILLS**Italian** (mother tongue) **English** (6.5 IELTS certification) **French** (school level)**PUBLICATIONS**

(h-index Scopus=8)

- 1 Schiavoni M, Giordano, E, Roscini F, Clementi F. Numerical modeling of a majestic masonry structure: A comparison of advanced techniques. (2023) *Engineering Failure Analysis*, 149, art. no. 107293. DOI: 10.1016/j.engfailanal.2023.107293 - Journal Paper
- 2 Schiavoni M, Giordano, E, Roscini F, Clementi F. Advanced numerical insights for an effective seismic assessment of historical masonry aggregates. (2023) *Engineering Structures*, 285, art. no. 115997. DOI: 10.1016/j.engstruct.2023.115997- Journal Paper
- 3 Schiavoni M, Giordano, E, Roscini F, Clementi F. Numerical Assessment of Interacting Structural Units on the Seismic Damage: A Comparative Analysis with Different Modeling Approaches. *Appl. Sci.* 2023, 13, 972. <https://doi.org/10.3390/app13020972>- Journal Paper
- 4 Roscini F, Guadagnini M. Bond behaviour of steel cords embedded in inorganic mortars. *Materials*, Volume 15, 2022, 5125, ISSN 19961944, DOI: 10.3390/ma15155125 - Journal Paper
- 5 Reale L, Cerri M, Roscini F, Fornaciari da Passano M, Orlandi F. Fibers development in a dioecious hemp variety: the role of plant sex and cultivation conditions. (2022) *Plant Biosystems*, 2022, ISSN 11263504, DOI: 10.1080/11263504.2022.2089768 - Journal Paper
- 6 Nerilli F, Roscini F, Ferracuti B. In-plane shear response of FRCM-strengthened masonry walls. (2022) *World Congress in Computational Mechanics and ECCOMAS Congress*, DOI: 10.23967/eccomas.2022.149 – Conference Paper
- 7 Roscini F, Guadagnini M. Bond behavior of steel cords for SRG systems to cementitious and lime based mortar. *Mechanics of Masonry Structures Strengthened with Composite Materials ‘MuRiCo7’* – Conference Proceeding – Conference Paper
- 8 Thermou GE, De Santis S, de Felice G, Alotaibi S, Roscini F, Hajirasouliha I, Guadagnini M. Bond Behaviour of Multi-Ply Steel Reinforced Grout Composites, *Construction and Building Materials*, Volume 305, 2021, 124750, ISSN 0950-0618, <https://doi.org/10.1016/j.conbuildmat.2021.124750>. - Journal Paper
- 9 Roscini F, De Santis S, Meriggi P, de Felice G. Overview of the mechanical properties of steel reinforced grout systems for structural retrofitting. *12th International Conference on Structural Analysis of Historical Constructions SAHC 2021*. Conference Proceeding – Conference Paper
- 10 Roscini F, Malena M and de Felice G. Experimental evidences and numerical modelling of SRG systems under uniaxial load. *10th International Conference on FRP Composites in Civil Engineering (CICE 2021)*. Conference Proceeding – Conference Paper
- 11 Roscini, F., Trochoutsou, N. and Guadagnini, M. 2020. A critical assessment of current acceptance criteria for TRM strengthening systems. In: *The University of Sheffield* (ed.) Conference contribution.
- 12 de Felice G, D’Antino T, De Santis S, Meriggi P, Roscini F (2020) Lessons learned on the tensile and bond behaviour of Fabric Reinforced Cementitious Matrix (FRCM) composites. *Frontiers in Built Environment*, section Earthquake Engineering. DOI: <https://doi.org/10.3389/fbuil.2020.00005> - Journal Paper
- 13 Corritore D, Roscini F, Calisti D. Seismic risk mitigation in industrial plants with structural fastening systems. *XVIII Convegno Anidis – Ascoli Piceno 2019*. Conference Proceeding – Conference Paper

- 14 De Santis S, de Felice G, Roscini F. Retrofitting of Masonry Vaults by Basalt Textile-Reinforced Mortar Overlays. *International Journal of Architectural Heritage*, 2019, 13(7), pp. 1061-1077. - Journal Paper
- 15 De Santis S, Roscini F, de Felice G. Strengthening of Masonry Vaults with Textile Reinforced Mortars. *RILEM Book series, Volume 18*, 2019, Pages 1539-1547. DOI: https://doi.org/10.1007/978-3-319-99441-3_165. Book series — Book Chapter
- 16 Meriggi P, de Felice G, De Santis S, Morganti M, Roscini F. Durability of steel reinforced grout systems subjected to freezing-and-thawing conditioning. *Proceedings of the 1st fib Italy YMG Symposium on Concrete and Concrete Structures, FIBPRO 2019*, 2019, pp. 47–55. – Conference Paper
- 17 Malena M, Sangirardi M, Roscini F, de Felice G. Numerical modelling of the experimental response of SRG systems. *Key Engineering Materials, Volume 817 KEM*, 2019, Pages 37-43 - 6th International Conference on Mechanics of Masonry Structures Strengthened with Composite Materials, MuRiCo6 2019; Bologna; Italy; 26 June 2019 through 28 June 2019; Code 231019. Book series – Conference Paper
- 18 De Santis S, Stryzewska T, Bandini S, de Felice G, Hojdys Ł, Krajewski P, Kwiecień A, Roscini F, Zając, B. Durability of steel reinforced polyurethane-to-substrate bond. *Composites Part B: Engineering, Volume 153*, 15 November 2018, Pages 194-204. DOI: <https://doi.org/10.1016/j.compositesb.2018.07.043>. - Journal Paper
- 19 De Santis S, Roscini F, de Felice G. Full-scale tests on masonry vaults strengthened with Steel Reinforced Grout. *Composites Part B: Engineering, Volume 141*, 15 May 2018, Pages 20-36. DOI: <https://doi.org/10.1016/j.compositesb.2017.12.023>. - Journal Paper
- 20 Roscini F, De Santis S, de Felice G, 2017. Evaluation of the bond behaviour of Steel Reinforced grout applied to curved masonry substrate via bending test. *PROHITECH'17 3rd International Conference on Protection of Historical Constructions*, At Lisbon, Portugal. Conference Proceeding – Conference Paper
- 21 Tekieli M, De Santis S, de Felice G, Hojdys, L, Krajewski P, Kwiecień A, Roscini F, 2017. Strain and crack detection in experimental tests on textile reinforced mortar composites. *9th International Conference on Fibre-Reinforced Polymer (FRP) Composites in Civil Engineering, CICE 2018, Volume 2018 – July, 2018, Pages 290-297- 9th International Conference on Fibre-Reinforced Polymer (FRP) Composites in Civil Engineering, CICE 2018; Paris; France; 17 July 2018 through 19 July 2018; Code 155801. Conference Proceeding – Conference Paper*
- 22 Thermou GE, De Felice G, De Santis S, Alotaibi S, Roscini F, Hajirasouliha I, Guadagnini M. Mechanical characterization of multi-ply steel reinforced grout composites for the strengthening of concrete structures (2018) *9th International Conference on Fibre-Reinforced Polymer (FRP) Composites in Civil Engineering, CICE 2018, 2018-July, pp. 298-305. Conference Proceeding – Conference Paper*
- 23 Leone M, Aiello MA, Balsamo A, Carozzi FG, Ceroni F, Corradi M, Gams M, Garbin E, Gattesco N, Krajewski P, Mazzotti C, Oliveira D, Papanicolaou C, Ranocchiai G, Roscini F, Saenger D, 2017. Glass fabric reinforced cementitious matrix: Tensile properties and bond performance on masonry substrate. *Composites Part B: Engineering, Volume 127*, 15 October 2017, Pages 196-214. DOI: <https://doi.org/10.1016/j.compositesb.2017.06.028>. Journal Paper
- 24 Tekieli M, De Santis S, de Felice G, Kwiecień A, Roscini F, 2017. Application of Digital Image Correlation to composite reinforcements testing. *Composite Structures, Volume 160*, 15 January 2017, Pages 670-688. DOI: <https://doi.org/10.1016/j.compstruct.2016.10.096>. Journal Paper
- 25 De Santis S, Roscini F, de Felice G, 2017. Retrofitting masonry vaults with basalt textile reinforced mortar. *Key Engineering Materials Volume 747 KEM*, 2017, Pages 250-257, International Conference on Mechanics of

Masonry Structures Strengthened with Composites Materials, MuRiCo5 2017; Bologna; Italy; 28 June 2017 through 30 June 2017; Code 195699. DOI: <https://doi.org/10.4028/www.scientific.net/KEM.747.250>. Conference Proceeding – Conference Paper

- 26 De Santis S, Roscini F, de Felice G, 2016. Experimental characterization of mortar-based reinforcements with carbon fabrics. Proceedings of 16th International Brick and Block Masonry Conference 'Masonry in a world of challenges' (IB2MAC), June 26-30, 2016, Padova, It. Conference Proceeding – Conference Paper
- 27 Roscini F, De Santis S, de Felice G, 2016. Experimental investigation on the mechanical behaviour of mortar-based strengthening systems. Proceedings of 10th International Conference on Structural Analysis of Historical Constructions (SAHC2016), 12-16 September 2016, Leuven, Be. Conference Proceeding – Conference Paper
- 28 Breccolotti M, D'Alessandro A, Roscini F, Bonfigli MF, 2015. Investigation of stress-strain behavior of recycled aggregate concrete under cyclic loads. Environmental Engineering and Management Journal, volume 14/2015, No.7. - Journal Paper

Authorization for the treatment of personal data in accordance with the law 196/2006 on privacy.
Rome, 10th September 2023

F.to Francesca Roscini