Curriculum vitae

Nicola Orlando

Via G. Marcora, n°37/55, 45023 Costa di Rovigo (RO) (Italy)

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nicola.orlando@ingpec.eu

EDUCATION and TRAINING

01/01/2019–31/01/2022

Research Assistant

University of Ferrara, Department of Civil Engineering, Ferrara (Italy)

Supervisor: Elena Benvenuti

- Research Topics:
  - Regularized XFEM Finite Element models
  - Advance modelling of wooden structures
  - Non-linear analisys and crack-tracking technique
  - Implementation of non linear FE alghrithms

01/11/2015–31/12/2018

Ph.D. Course in civil Engineering

University of Ferrara, Department of Civil Engineering, Ferrara (Italy)

- Supervisor: Elena Benvenuti
- Research Topics:
  - Regularized XFEM Finite Element models
  - Modeling of damage and discontinuities
  - Modeling of single shear-lap tests on FRP reinforced concrete blocks
  - Failure of FRP-reinforced concrete beams
  - 3D Finite Element code implementation

17/16/2018–22/06/2018

Dobbiaco Summer School 2018 – Theory and Practice of the Virtual Element Methods (VEM)

Organized by the Department of Mathematics of the University of Innsbruck and the Department of Mathematic and Geosciences of the Univeristy of Trieste

03/04/2017–07/04/2017

Advanced Course in Computational Methods for the Analysis, Design and Failure of Composites

Organized by the International Centre for Mechanical Sciences (CISM), Udine (Ud)

07/10/2015–08/10/2015

X-DMS 2015 Short Course

Organized by the European Community in Computational Methods in Applied Sciences (ECCOMAS), Ferrara (Italy)

13/10/2011–18/12/2014

Master Degree in Civil Engineering

University of Ferrara, Ferrara (Italy)

- Grade: 110/110 *cum laude*
- Dissertation: "3D modelling of Delamination of Pull-Out tests on FRP Reinforced Concrete Blocks trough a Regularized XFEM Approach", Thesis Coordinator: Elena Benvenuti, Thesis Advisor: Antonio Tralli, Giulio Ventura, Daniele Ferretti

- Relevant Classes: Structural Design, Nonliner Structural Mechanics, Earthquake Engineering, Structural Rehabilitation, Geotechnics, Building System Design, Hydrology and Hydraulic Construction.

30/09/2008–12/10/2011

Degree in Civil and Environmental Engineering

University of Ferrara, Ferrara (Italy)

- Grade: 108/110
- Dissertation: "Semi-Automatic Procedure for the Detection of Simple Closed Meshes in Complex Water Supply Networks", Thesis Coordinator: Enrico Creaco, Marco Franchini.
- Relevant Classes: Building design, Structural Mechanics, Building Construction Techniques, Geology, Hydraulics.

01/09/2003–01/07/2008

High School Certificate

Vo Tech "Amos Bernini", Rovigo (Italy)

- Grade: 100/100

PUBLICATIONS

JOURNAL PAPERS

- Elena Benvenuti, Nicola Orlando, Daniele Ferretti, Antonio Tralli (2016). "**A new 3D experimentally consistent XFEM to simulate delamination in FRP-reinforced concrete**". *Composites Part B: Engineering*, Volume 91. Pages 346-360.

- Nicola Orlando, Elena Benvenuti (2016). "**Advanced XFEM Simulation of Pull-out and Debonding of Steel Bars and FRP-Reinforcements in Concrete Beams**". *American Journal of Engineering and Applied Sciences*. Volume 9, Issue 3. Pages 746-754.

- Elena Benvenuti, Nicola Orlando (2017). "**Failure of FRP-strengthened SFRC beams through an effective mechanism based regularized XFEM framework**". *Composites Structures.* Volume 172, Pages 345-358.

- Elena Benvenuti, Nicola Orlando (2018). **"Intermediate flexural detachment in FRP-plated concrete beams through a 3D mechanism-based regularized eXtended Finite Element Method"**. *Composites Part B: Engineering*, Volume 145, Pages 281-293.

- Nicola Orlando, Yuri Taddia, Elena Benvenuti, Benedetto Pizzo, Claudio Alessandri (2019). **"End-Repair of timber beams with laterally-loaded glued-in rods: experimental trials and failure prediction through modelling"**, *Construction and Building Materials,* Volume 195, Pages 623-637.

- Elena Benvenuti, Nicola Orlando (2020). **"An orthotropic multi-surface damage plasticity FE-formulation for wood: Part I – Constitutive Model"**, *Construction & Structures,* Volume 240, Page 106351.

- Elena Benvenuti, Nicola Orlando (2020). **"An orthotropic multi-surface damage plasticity FE-formulation for wood: Part II – Numerical applications"**, *Construction & Structures,* Volume 240, Page 106351.

- Elena Benvenuti, Nicola Orlando (2021). **"Modeling mixed mode cracking in concrete through a regularized extended finite element formulation considering aggregate interlock"**, *Engineering Fracture Mechanics,* Volume 258, Page 108102.

- Elena Benvenuti, Nicola Orlando (2021). **"A mesh-independent framework for crack tracking in elastodamaging materials through the regularized extended finite element method"**, *Computational Mechanics,* Volume 68, Page 25-49.

CONFERENCES

- Elena Benvenuti, Nicola Orlando (2020). "**Crack-Tracking in the Regularized XFEM: A viable alternative to Nonlocal and Cohesive Zone Models**". Abstract submitted to *the 22th National Conference of Computational Mechanics and the IX Meeting of the Aimeta Material Group, Ferrara, Italy, September 13-14, 2018*

- Nicola Orlando, Clemens Gebhardt, Micheal Kaliske, Elena Benvenuti (2018). "**A regularized eXtended Finite Element framework coupled to multi-surface plasticity for wooden beams**". Abstract submitted to *the 22th National Conference of Computational Mechanics and the IX Meeting of the Aimeta Material Group, Ferrara, Italy, September 13-14, 2018*

- Elena Benvenuti, Nicola Orlando (2017). "**Accurate XFEM simulation of failure and debonding of FRP-plate-reinforced beams of steel fiber reinforced concrete**". Abstract presented to *the 14th National Conference of the Aimeta, Salerno, Italy, September 4-7, 2017*

- Elena Benvenuti, Nicola Orlando (2017). "**Continuous-Discontinuous XFEM-based 3D procedure for Failure and Debonding of FRP-reinforced beams**". *Paper* submitted to *the 14th International Conference on Computational Plasticity, Fundamentals and Applications, Barcelona, Spain, September 5-7, 2017*

- Giulio Ventura, Nicola Orlando, Elena Benvenuti (2017). "**An equivalent Polynomial Library for Accurate Quadrature of the Regularized Heaviside Enrichment Function**". Abstract submitted to *the 14th International Conference on Computational Plasticity, Fundamentals and Applications, Barcelona, Spain, September 5-7, 2017*.

- Nicola Orlando, Elena Benvenuti (2017). "**Advanced Simulation of Debonding of FRP Plates from Steel-Fiber-Reinforced-Concrete Beams under Bending**". Abstract presented to *the 25th Annual International Conference on Composites/Nano Engineering, ICCE-25, Rome, Italy, July 16-22, 2017*.

- Elena Benvenuti, Nicola Orlando (2017). **"Regularized XFEM for the Failure Analysis of FRP-Reinforced Concrete Beams Under Bending".** Abstract submitted to *the 5th International Conference on Computational Modeling of Fracture and Failure of materials and Structures, Nantes, France, June 13-14, 2018*.

- Elena Benvenuti, Nicola Orlando (2016). "**Effective 3D Regularized Xfem for Pull-Out of Steel Bars in Concrete, bending and Shear Tests on FRP-Reinforced Concrete Beams**". Abstract submitted to *the 7th European Congress on Computational Methods in Applied Sciences and Engineering, Crete Island, Greece, June 5-10, 2016 (Vol. 2*), Pages 2726-2733

PARTICIPATION

- **GIMC/GMA 2018** - XXII National Conference of Computational Mechanics and the IX Meeting of the AIMETA Materials Group, Ferrara, Italy, September 27-29, 2016

- **AIMETA 2017** - XXIII National Conference AIMETA Material Group, Salerno, Italy, September 4-7,2017

- **ICCE25 2017** – XXV Annual International Conference on Composites/Nano Engineering, Rome, Italy, July 16-22, 2017

- **GIMC/GMA 2016** – XXI National Conference of Computational Mechanics and the VIII Meeting of the AIMETA Materials Group, Lucca, Italy, June 27-29, 2016

- **X-DMS 2015, Extended Discretization Methods** – XFEM, GFEM, Non-Conforming, Patches and Non-Standard Finite Elements, Ferrara, Italy, September 9-11, 2016

OTHER ACADEMIC EXPERIENCES

2015-2019

Structural Mechanics Tutor

University of Ferrara (Italy), Structural Mechanics Tutor of the degree course held by Elena Benvenuti

01/09/2017-01/12/2017

Research Collaboration with the Institute of Structural Analysis of Dresden

Dresden (Germany), Research project: “Predition of failure of wooden structures by the use of XFEM”

01/07/2015–30/09/2015

Research Associate

University of Ferrara (Italy), Collaboration with Claudio Alessandri, Implementation of a nonlinear material model for wood in order to model the structural behaviour of repaired wood beams

06/01/2015–30/06/2015

Research Associate

University of Ferrara (Italy), Collaboration with Elena Benvenuti, Study of delamination of FRP reinforcement from concrete blocks observed in experimental single-lap shear test

PERSONAL SKILLS

Mother tongue(s): Italian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	B2	C1	B1	B1	B2
	First Certificate in English, Cambridge English				

Levels: A1 and A2: Basic user - B1 and B2: Independent user - C1 and C2: Proficient user

Job-related skills

- Excellent command of 2D/3D CAD softwares
- Good Command of FEM softwares and 2D/3D modelling (Straus7, Midas GEN, PRO_SAP, Gmsh)
- Good command of programming (Fortran, Latex, C#)
- Good knowledge of FEM theory and nonlinear analysis

Digital competence

SELF-ASSESSMENT				
Information processing	Communication	Content creation	Safety	Problem solving
Proficient user	Proficient user	Proficient user	Proficient user	Proficient user

- Good command of Office Suite
- Good command in Raster and Vector Graphics (Gimp, Inkscape) and editing video (Premiere Pro, After Effects)

DICHIARAZIONE SOSTITUTIVA DI CERTIFICAZIONE (art. 46 e 47 D.P.R. 445/2000)

Il sottocritto Nicola Orlando, ai sensi degli artt. 46 e 47 del D.P.R. del 28 dicembre 2000, n. 445 e consapevole delle responsabilità penali in cui può incorrere in caso di dichiarazione mendace, dichiara che le informazioni riportate nel presente curriculum vitae corrispondono a verità.

Costa di Rovigo, 11/04/2022

Firma

Il sottoscritto dichiara di essere informato, ai sensi del d.lgs. n.196/2003 e del GDPR 679/16 – "Regolamento europeo sulla protezione dei dati personali" che i dati personali raccolti saranno trattati anche con strumenti informatici esclusivamente nell'ambito del procedimento per il quale la presente dichiarazione viene resa e per tutti gli adempimenti connessi.

Costa di Rovigo, 11/04/2022

Firma