Riccardo Ghelfi

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Profile

Graduate in Civil Engineering and currently a PhD candidate in Geotechnical Engineering, with research interests focused on slope stability and soil–structure interaction. Passionate about innovation in geotechnics and the application of advanced technologies. Alongside my academic activity, I recently began serving as a municipal councilor in a municipality of the Tuscan-Emilian Apennines, an experience that has deepened my commitment to local governance, territorial planning and sustainable development. Passionate about cinema, history and sustainability, I am motivated to bridge scientific research and community needs through evidence-based approaches to public decision-making.

Education

University of Parma

Master degree in Civil Engineering- Structures [110 cum Laude/110], sept 2022 - mar 2025

Thesis: Development of a methodology for modelling soil–pile interaction in an existing bridge: the case of Borgoforte sul Po. The work involved the development of coupled structural and geotechnical finite element models for the time-dependent assessment of a soil-foundation-structure system, framed within a broader perspective on infrastructure resilience, fluvial morphology and the long-term interaction between built structures and their natural environment.

Bachelor degree in Civil and Enviromental Engineering [110 cum Laude/110] sept 2019 - dec 2022

Thesis: A study on the vulnerability of existing reinforced concrete bridges.

Istituto di Istruzione Superiore E. Fermi

Maturità Scientifica [93/100] sept 2014 - jul 2019

Experiences

Municipal councilor — *Pontremoli, MS*
Comune di Pontremoli — *05.2026 – today*

- I have chosen to serve as a municipal councilor as a form of commitment to the local community and active participation in public life. This role is integrated with my academic and research path in Civil Engineering, with a particular focus on territorial planning, population retention and the repopulation of inland and mountain areas, through sustainable development policies and the enhancement of local resources.

PhD student — *Parma, PR*
University of Parma — *11.2025 – today*

- PhD student in the OPUS Project "Optimisation of the Design of Foundation Micropiles through the Sustainable Use of Building Materials", conducting research on the mechanical behaviour, design optimisation and reliability assessment of micropile foundation systems. Research activities focus on soil–structure interaction, numerical modelling, probabilistic methods and statistical analysis for geotechnical engineering applications, with particular emphasis on improving the performance and reliability of foundation and slope stabilisation systems.

Research Fellow — *Parma, PR*
University of Parma — *04.2025 – 08.2025*

- Research fellow within the ERCULES Project "Enhancing RC critical structUres vuLnerability assEssment through State- and time-dependent fragility curves".
- Structural analysis performed using FEM on an existing reinforced concrete building subject to environmental degradation.

Trainee — *Parma, PR*
University of Parma — *09.2024 – 02.2025*

- Study of a methodology for the probabilistic analysis of the structural reliability of existing reinforced concrete buildings subject to corrosion.

Student of Percorso per le Competenze Trasversali e l'Orientamento *Pontremoli, MS*
Museo delle Statue Stele - MUST *03.2017, 03.2018*

- Welcoming and assisting visitors, collaborating with the curatorial team, ensuring the conservation and maintenance of works of art or historical artefacts. This experience fostered an awareness of the relationship between cultural heritage, landscape identity and local community engagement in mountain areas.

Further training

University of Parma **ECTS-4**
Open pit and underground excavations: geological aspects, monitoring and risk analysis *feb 2026*

- Advanced course in applied geology for underground excavations, focusing on geological and geotechnical aspects of design, construction, and in-situ monitoring. Topics included excavation stability, ground behaviour, soil–structure interaction, and the interpretation of monitoring data in complex geological settings, with particular emphasis on geotechnical assessment and the behaviour of underground engineering works.

ECTS-5
Introduction to Geostatistics [final grade: excellent] *apr 2026*

- Course in geostatistics covering fundamental concepts and applications in spatial estimation, uncertainty modelling, and stochastic simulation. The course included practical exercises using SGeMS for spatial interpolation and modelling. Particular attention was given to variogram analysis and the treatment of spatial variability, with relevance to the characterization of heterogeneous ground conditions in complex geological environments.

Additional Activities

University of Parma
Teaching support activities

- Bachelor's degree programme in "Scienze Geologiche" - Course Unit: Geotecnica (*nov - dec 2025*)
- Master's degree programme in "Ingegneria Civile" - Course Unit: Fondazioni (*feb - jun 2026*)
- Master's degree programme in "Scienze geologiche applicate alla sostenibilità ambientale" - Course Unit: Meccanica delle rocce e stabilizzazione dei versanti (*feb - jun 2026*)
- Master's degree programme in "Environmental engineering for risk mitigation" - Course Unit: Advanced landslide risk analysis and mitigation (*feb - jun 2026*)

STEM-UP: University, Schools and Industry to Build the Future *mar 2026*

- Participation in the STEM-UP outreach project promoting STEM disciplines through university-school-industry collaboration and science communication. My contribution focused on geotechnical and seismological topics, with emphasis on soil-structure interaction and slope stability and their effects on built environments and communities. The activity aimed to translate technical concepts for school students and the public within the project "Vibrazioni visibili: capire l'impatto dei terremoti su territori e costruzioni".

Fiorenzuola D'Arda, PC
Seminar speaker *dec 2025*

- Seminar delivered to upper secondary school students on sustainability and innovation in the construction sector within the framework of the UN 2030 Agenda. The presentation addressed SDGs 12 and 13, focusing on environmental impacts of construction, life-cycle thinking, and embodied carbon as key factors in sustainable material selection and design.

Thesis co-supervisor

- Thesis co-supervisor of of two Master's theses in Civil Engineering, focusing on finite element methods, optimisation of construction materials and design techniques, and soil-structure interaction within geosystems.

Software

F.E.M.: Abaqus, SAP2000, SeismoStruct, Straus7, ConSteel.
Geotechnical Modeling: FLAC3D, Plaxis3D, RS2, RSData, Slide.
Other: Office, AutoCAD, MatLab, GanttProject, QGIS, SGeMS.

Languages

Italian Native
English C1

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