

Luis Rodrigo Perez Pinto

Geotechnical Engineer • PhD • Civil Engineering

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PROFESSIONAL PROFILE

Geotechnical engineer with infrastructure experience and doctoral specialization in computational geomechanics. Experienced in finite element and numerical modelling, geotechnical earthquake engineering, coupled hydro-mechanical analysis, and soil-structure interaction. Develops and verifies advanced models for cyclic and seismic engineering applications.

TECHNICAL EXPERTISE

Geotechnical Finite Element Analysis; geotechnical earthquake engineering; seismic site response; soil-structure interaction; unsaturated soil mechanics; slope stability; earth-retaining structures.

Numerical Computational geomechanics; constitutive modelling; nonlinear cyclic and dynamic analysis; coupled hydro-mechanical modelling; numerical verification and benchmarking.

SOFTWARE

Software PLAXIS; OpenSees; GeoStudio; MATLAB.

Programming Python; C++.

LANGUAGES

Spanish – Native

English – C1

Italian – B2

TECHNICAL TRAINING

Numerical geomechanics

- NUMGE, Imperial College London (2023)
- Numerical Modeling of Geomechanical Problems, Sapienza (2024)
- Numerical Modelling in Geotechnical Engineering, University of Molise (2024)

Constitutive modelling

- Constitutive and Numerical Modeling of Geomaterials, Federico II (2023)
- Failure and Instability in Geomaterials and Geosystems, Sapienza (2024)

SSI & earthquake engineering

- OpenSees SSI Winter School, Sapienza and University of Molise (2023)
- CompDSSI Workshop, Assisi (2024)
- Earthquake-Induced Soil Liquefaction Workshop, Naples (2024)

Programming

- Berkeley Programming Bootcamp

EDUCATION

PhD in Geotechnical Earthquake Engineering

2022–2026

University of Molise, Italy

Thesis: Coupled hydro-mechanical response of partially saturated soils under cyclic and dynamic loading.

Visiting PhD Researcher

Mar–Oct 2025

University of Washington, Seattle, USA

Finite element development for partially saturated soil modelling.

Master's in Highways Engineering

2018–2022

San Francisco Xavier University of Chuquisaca, Bolivia

Earth-retaining structures using analytical and numerical soil mechanics.

Bachelor's in Civil Engineering

2012–2018

San Francisco Xavier University of Chuquisaca, Bolivia

Slope stability under saturated and unsaturated conditions.

PROFESSIONAL EXPERIENCE

Field Engineer

Sep 2021–Apr 2022

FECOMSA – Sucre, Bolivia

- Managed pavement maintenance delivery for the Yotala–Totacoa Road Drainage System Maintenance project.
- Oversaw field density testing and soil sampling for classification, modified Proctor, and CBR laboratory testing.
- Assisted with procurement of asphalt and granular base-course materials.

Geotechnical Engineer

Mar 2021–Sep 2021

EZYCONS – Sucre, Bolivia

- Led slope-stability analyses for the Mosoj Llajta–Yotala Road Repair and Maintenance project.
- Performed coupled seepage and stability analyses with SIGMA/W, SEEP/W, and SLOPE/W.

Engineering Intern

Aug 2019–Dec 2019

YPFB Andina – Sucre, Bolivia

- Coordinated and conducted soil resistivity testing for the cathodic protection of gas pipelines.
- Selected from 262 candidates through the national *Semillero de Talentos* programme.

TECHNICAL & RESEARCH EXPERIENCE

Doctoral Researcher – Computational Geomechanics

2022–2026

University of Molise

- Developed and verified numerical and constitutive models for partially saturated soils under nonlinear cyclic and seismic loading.
- Modelled hydro-mechanical response, seismic soil behaviour, and soil-structure interaction using finite element analysis, OpenSees, MATLAB, Python, and C++.
- At the University of Washington, implemented and benchmarked an OpenSees finite element formulation incorporating partial-saturation effects.

SELECTED TECHNICAL PUBLICATIONS

- **Perez, R.**, Fierro, T., Marinelli, F., Santucci de Magistris, F., & Arduino, P. OpenSees finite element implementation for partially saturated soils. *PBD-V Chile 2026*, forthcoming Nov 2026.
- Flora, A., Bilotta, E., Valtucci, F., Fierro, T., **Perez, R.**, de Magistris, F. S., & Aysal, N. Liquefaction effects in Gölbaşı. *Engineering Geology* 338 (2024).
- **Perez, R.**, Fierro, T., & Santucci de Magistris, F. Cyclic response of unsaturated soils. *Shock and Vibration*, 8451239 (2024).

TEACHING EXPERIENCE

2025	Unsaturated Soil Mechanics Lecturer	UMSA	Master's course: slope stability, retaining walls, and seismic engineering.
2025	Classical Soil Mechanics Lecturer	USFX	Master's course: effective stress, failure envelopes, consolidation, and bearing capacity.
2024	Geotechnical Design Lecturer	University of Molise	Master's course: plasticity and critical state theory.