



# Humberto Monteiro

Engineer, Ph.D.

hasmonteiro.com

Engineer with a background in numerical and computational simulation, programming and applied mathematics. Researcher of computational mechanics, numerical methods, machine learning and data-driven modeling. Experience in RD&I, hydrology, environmental studies, structures and education. I like to solve problems and all the sciences!

☎ 5531991332639 ✉ humbertomonteiro@gmail.com 🔗 /hasmonteiro 🌐 /hasmonteiro 📞 /392875953386

## GOALS

An opportunity to apply my technical and analytical skills in challenging and innovative experiences within the areas of technology and engineering. With creativity, initiative, and balance, to develop my tasks and increase the institution's multidisciplinary team.

## EDUCATION

**DOCTORATE IN STRUCTURAL ENGINEERING** · UFMG · Belo Horizonte, MG, BR · (2021). *Direct ascension to Ph.D. without a Master's degree for academic merit.*

**BACHELOR IN CIVIL ENGINEERING** · UFMG · Belo Horizonte, MG, BR · (2014). *Two times awarded with honors by the School of Engineering of UFMG.*

## WORK EXPERIENCE

**VISITING EXPERT/SCHOLAR** · Vale/SENAI CIMAETEC – MINE Program · BR · 04/2021 – now: The Mining Innovation for a New Environment (MINE) is an open innovation program implemented by Vale aiming to build the future of mining. I'm a part of a multi-professional external team of 30 experts with different backgrounds working to build innovative solutions for the mining industry. The program also features the MIT Professional Education, the MIT Environmental Solutions Initiative, Imperial College, the integrated technology center SENAI CIMAETEC and the corporate innovation consultant enterprise The Bakery. Selected among 5770 candidates.

**RESEARCHER** · Universidade Federal de Minas Gerais · BH/MG/BR · 03/2015 – 01/2021: Doctoral scholar; CNPq scholarship holder (for a predefined period). Use of the generalized/extended finite element method (G/XFEM) in two-scale material nonlinear analysis of quasi-brittle and heterogeneous solids. Constitutive modeling, numerical analysis, computational geometry, software engineering, structural engineering, concrete structures, among others. Technologies: Java, Git, JUnit, Python, R, Linux, Matlab, among others.

**PROFESSOR** · Centro Universitário Newton Paiva · BH/MG/BR · 08/2019 – 03/2020: Lecturer in the lato sensu postgraduate certificate/diploma track "Structural Engineering for Construction" (Pós-Graduação em Engenharia de Estruturas para a Construção Civil). Units: Numerical Methods in Engineering - Introduction to the Finite Element Method and Thesis (Supervisor). Technologies: SAP2000, Octave, Latex, Beamer.

**CIVIL ENGINEER e ENG. INTERN** · Leme Engenharia-Tractebel GDF/SUEZ · BH/MG/BR · 06/2013 – 04/2014: Implementation of environmental programs (hydrological, hydrosedimentological and climatological monitoring) of hydroelectric projects. Technical follow-up, rainfall

studies, flow-rate curve analysis, time-series assessments, data-base management, data wrangling, primary data analysis, among others. Technologies: Excel, Access, Word, GIS, R, SQL, Windows, among others.

**ENGINEERING INTERN · Unitech Engenheiros e Consultores · BH/MG · 03/2013 – 06/2014:** Design of steel structures with industrial application. Detailing and review of projects. Technologies: SAP2000, CAD, mCalcLIG, Excel, Word, Windows.

**PROJECT/RESEARCH INTERN · Fundep/UFGM/DEMC-RECOPE · BH/MG · 03/2012 – 03/2013:** Project management, quality control, technological control of concrete, supervision of public construction works, operational and administrative coordination of interns and technicians, among others. Technologies: EMIC press, infrared thermographe, rebound hammer, resistivity meter, untrasound, Excel, among others.

**RESEARCH ASSISTANT · UFGM/DEES/LENHS · BH/MG · 10/2010 – 01/2012:** Experimental investigation of fatigue fracture in structural steel alloys. Development of a new experimental methodology to track the nucleation and propagation of cracks in steel plates by measuring indirect parameters, such as flexural moments. Participant of some activities of the Energy and Hydraulic Efficiency in Sanitation Lab. -LENHS - UFGM. Technologies: ANSYS, ImageJ, mufla, EPANET, Excel, among others.

## COMPLEMENTARY EDUCATION

Leadership In Innovation · MIT · 07/2021  
 Minerals Processing · Imperial College · 04/2021  
 Metodologias Ágeis · The Bakery · 04/2021  
 Linux e Shell Script · Dig. Inn. One · 02/2021  
 Análise de Dados · LNCC · 02/2021  
 Deep Learning · LNCC · 02/2021  
 Python p/ Data Science · LNCC · 02/2021  
 Fund. Teoria Apren. Máq. · LNCC · 01/2021  
 Big Data Analytics c/ R e Azure ML · DSA · 01/2021  
 Metodologias Ativas · FGV · 01/2021  
 Intro. Workflows Cient. Python · LNCC · 01/2021  
 R para HPC · LNCC · 01/2021  
 Intro. Config. e Gerenc. Clusters · LNCC · 01/2021  
 OpenMP (Intro. + Avanç.) · LNCC · 01/2021  
 Java (Bás. + Avan. + Web) · Treinar · 03/2015  
 Revit · Desenhar Comp. Gráfica · 12/2010

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## SOME PAPERS

**MONTEIRO, H. A. S. et al.** A new approach for physically nonlinear analysis of continuum damage mechanics problems using the g/xfem finite element method with global-local enrichment. *Engineering Analysis with Boundary Elements*. v. 113. p. 277--295. Abril 2020

**MONTEIRO, H. A. S. et al.** Análisis global-local de medios lineales utilizando el método de elementos finitos generalizados. *Mecánica Computacional*, Santa Fé - Argentina, v. XXXVI, n. 29, p. 1359--1368, 2018.

**MONTEIRO, H. A. S. et al.** Multiscale strategy for the analysis of softening media using the generalized finite element method. In: CILAMCE -- IBERO-LATIN AMERICAN CONGRESS ON COMPUTATIONAL METHODS IN ENGINEERING, XXXVIII, 2017, Florianópolis-SC.

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## SKILLS

***	Java, R, Matlab, Redação, DataViz, Math, DataAnalysis, Storytelling, FEA
**	Python, PowerBI, NLP, ANN/DL, Linux, Git, Excel, Office, TeX, Agile
*	C/C++, HTML, CSS, Tableau, SQL, Azure/Cloud, Docker, Ansys
Problem Solving, Analytical Thinking, Resilience, Attention to Details, Teamwork	

## LANGUAGES

English: Advanced  
 Spanish: Advanced  
 French: Intermediate  
 Chinese Mandarin: basic