Humberto Monteiro

Expert in modeling and simulation, with 6+ years of experience in the engineering and technology sectors. I like to solve problems!

BH,MG,BR | +5531991332639 | humbertomonteiro[at]gmail.com | hasmonteiro.com | linkedin.com/in/hasmonteiro

EXPERIENCE

PARAGON DECISION SCIENCE – SP, Brazil

Modeling and Simulation Analyst – Industrial Eng., Operations Research, Analytics and BI *Jan 2022 - present*

- Developed models and strategic simulations for logistical and supply chain problems, with emphasis on the oil and gas industry.
- Conducted tactical/strategic studies for the processes of one of the largest logistics operators in the oil sector.
- Produced analytical and business intelligence studies using mathematical models and numerical-computational tools, such as those based on discrete events (e.g. Arena).
- Programed user interfaces and APIs for input and output using resources such as VBA and Python.

IGTI – MG, Brazil

Professor – Deep Learning Engineering / Frameworks for Neural Networks *Dec 2021 – present*

- Developed teaching and lesson plannings for a training course in artificial neural networks (more than 30 hours; multilayer perceptron, recurrent neural networks, convolutional neural networks, etc.)
- Built lecture notes, practical work, technical challenges, questions, forums, among other active methodologies tools.
- Applied several frameworks for neural networks in didactic-pedagogical activities (Theano, CNTK, Tensorflow, Keras, PyTorch, H2O, Apache Spark MLib, Open CV, among others)
- Produced asynchronous classes and conducted synchronous classes.

VALE S.A./SENAI CIMATEC – BA, Brazil

Expert – Engineering and Innovation *Apr 2021 – Present*

- Selected for the open innovation program of the world's largest mining company out of more than 5700 applicants, Worked with the MIT, Imperial College, and the corporative innovation consultant enterprise The Bakery.
- Developed a disruptive (and non-existent) technological solution for the analytical processing of an iron ore beneficiation by-product. Potential reduction of 20% in costs and 10% the emissions target of the company.
- Mathematically modeled iron ore processing lines and simulated all the designed hardware through numerical and computational techniques, using, e.g., implementations of methods such as DEM e FEM (Ansys, Rocky).
- Designed the architecture, front-end and back-end of an optimization software with predictive capabilities and statistical / machine learning algorithms, employing, among other resources, R, Python, dimensional modeling, and data engineering pipeline tools.
- Managed a significant part of the team's work using a hybrid management methodology (Scrum + Kanban + trad. PMI) so we delivered results in short time (2 to 3 months earlier).
- Implemented a natural language processor (NLP) for the automation of patent and technical state-of-art evaluation; evaluated 2500+ patents/articles/thesis.

FEDERAL UNIVERSITY OF MINAS GERAIS (UFMG) – BH, MG, Brazil

Senior Researcher – Numerical and Comp. Simulation in the Mechanics of Solids and Structures *Mar2015 – Jan 2021*
Research Assistant – Structural Engineering Dept. and Hydraulic Engineering Dept. *Oct 2010 – Jan 2012*

- Created a completely new numerical-computational strategy for multiscale analysis of nonlinear quasi-brittle media.
- Developed a Java system and coded new algorithms for the new technique. Used CI, Maven, jUnit and Java APIs.
- Implemented a heuristic and stochastic microstructure generator and a solver manager using Java.
- Inspected machine learning algorithms for the prediction of mechanical properties of materials using R and Python.
- Spearheaded research that originated three master's degree works and one PhD so far.
- Published more than 10 papers and a 420+ pages thesis.
- Conceived a new methodology for tracking the nucleation and propagation of fatigue cracks in structural steel, which was awarded two consecutive years by the research collegiate of the institution.
- Re-activated with a small team the Energy and Hydraulic Efficiency in Sanitation Lab.

UNIVERSITY CENTER NEWTON PAIVA – BH, MG, Brazil

Post-graduate professor – Structural Engineering for Civil Construction *Ago 2019 – Mar 2020*

- Trained 15+ engineers the finite element method theory and practice, a mandatory skill in the segment.

- Lectured the math fundamentals (linear algebra, differential equations etc.), the engineering perspective (with active methodologies, such as the project-based ones) and the software commonly used in the industry (SAP2000)
- Coached three final dissertation works.

TRACTEBEL GDF/SUEZ - LEME ENGENHARIA – BH, MG, Brazil
Civil Engineer and Trainee – Environmental Engineering Department *Jun 2013 – Mar 2014*

- Implemented hydrological and climatological monitoring programs for environmental licensing of hydroelectric ventures (one of them is one of the largest dams in the word).
- Extracted, transformed, and loaded (ETL) 24/7 data to the environmental database of the project (stream and batch).
- Performed data engineering CRUD activities to format, scale and secure the gathered data (e.g., hourly pluviometry data, daily stream flow parameters, among others).
- Developed 50+ data analysis studies, dashboards and reports for the client and the public licensing body.
- Analyzed time series with 50+ years of data to forecast pluviometry and predict future flow specific volumes.
- Inspected data with exploratory analysis and statistical evaluation (distributions, normal, hypotheses tests etc.)
- Represented the company in meetings with the client.

UNITECH ENGENEERS AND CONSULTANTS – BH, MG, Brazil
Engineering Intern – Structural Engineering Sector *Mar 2013 – Jun 2013*

- Assessed and reviewed structural engineering projects.
- Computed the parameters of the structures to fit the design to the engineering standards.
- Applied numerical software (FEM) to the design process of structures (standard metallic and tubes).

RESEARCH DEVELOPMENT FOUNDATION (Fundep/UFMG/DEMC-RECOPE) – BH, MG, Brazil
Project Management and Research Intern – Special Testing Lab *Mar 2012 – Mar 2013*

- Controlled the quality and audited public construction works (e.g., a renovation in oldest cultural institution of MG)
- Verified budget bills of consultancy works for the concrete manufacture industry.
- Monitored the structural integrity of historical heritage buildings (e.g., 18th century houses in Congonhas – MG).
- Performed destructive and non-destructive testing of concrete solids and structures.
- Coordinated the team of interns and technicians in environmental projects with the mining sector (reuse of waste material) and tested different concrete admixtures with highly technological machinery.
- Issued conformity reports for the clients.

EDUCATION

FEDERAL UNIVERSITY OF MINAS GERAIS (UFMG) – BH, MG, Brazil *Jan 2021*
PhD - Structural Engineering; Direct ascension to PhD without master's degree for academic merit.

FEDERAL UNIVERSITY OF MINAS GERAIS (UFMG) – BH, MG, Brazil *Jan 2014*
Bachelor - Civil Engineering; Two times awarded with honors (Academic Relevance Award of the School of Engineering).

COMMITTES

CEP-FCMMG. Member of the Research Ethics Committee of the Medical Sciences Faculty of Minas Gerais.
Engineering Computations. Reviewer of international CAE and software jorunal.
Applied Mathematical Modeling. Reviewer of international journal for simulation in engineering. JCR 5.129

PROFESSIONAL CERTIFICATES

Data Engineer Bootcamp (Bootcamp Engenheiro de Dados) – Institute of Management and IT (IGTI) *Oct 2021*
International Immersion Program of Agile (Agile World) – Institute of Management and IT (IGTI) *Oct 2021*
Leadership In Innovation – Massachusetts Institute of Technology (MIT) *Jun 2021*
Python for Data Science – National Laboratory of Scientific Computing (LNCC) *Feb 2021*
Big Data Analytics with R and Azure Machine Learning – Data Science Academy (DSA) *Jan 2021*
R for HPC – National Laboratory of Scientific Computing (LNCC) *Jan 2021*
more in hasmonteiro.com

SKILLS

Hard & Soft Skills: SQL, Java, HTML, MATLAB, Python, R, Airflow, Docker, PowerBI, Linux, Excel, Ansys, FEA, Azure, AWS, Cloud, Agile, Spark, Arena, Simio, Problem Solving, Attention to Details, Teamwork, Technical Writing.
Languages: Fluent in English and Spanish; Intermediate proficiency in French; Basic proficiency in Chinese Mandarin.