Daniel Lessa Coelho

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Dedicated and results-oriented mechanical engineer with strong skills in mechanical design, computational fluid dynamics, project execution, collaborative problem-solving, and data-driven communication. PhD candidate in computational physics with expertise in materials science, and with experience in building ETL pipelines, high-performance computing, analyzing large datasets, and developing computational models for complex systems.

SKILLS

Programming *Proficient:* Python | Linux (Shell/Bash) | Git | C/C++ *Familiar:* HTML | JavaScript | Markdown.

Tools Thermo-Calc Software | OVITO | ParaView | OpenFOAM | Jupyter Notebook | Visual Studio Code | MATLAB® Autodesk® AutoCAD® 2D/3D | SolidWorks™| AVEVA™ PDMS | Wolfram Mathematica® | Microsoft Office.

Languages *Proficient:* English | Portuguese *Conversational:* French | Spanish.

EXPERIENCE HIGHLIGHTS

Research Assistant
Jan 2021 – Dec 2025
Developed quantitative computational models for metals and their alloys
McGill University

- Led the development, implementation, and publication of a numerical model that quantitatively reproduced experimental data, enhancing the theoretical framework used to identify the source of previously misunderstood defects in cutting-edge industrial processes.
- Implemented and developed in-house C/C++ codes for multicore physics simulations on Unix-based HPC clusters, leveraging thousands of GPU hours to generate and analyze terabytes of simulation data, allowing the study of cutting-edge industrial processes at never before achieved length and time scales.

Teaching Assistant
Sep 2021 – Dec 2025
Taught physics labs, assisted in grading, and supported inquiry-based learning.
McGill University

- Prepared and led physics lab training sessions for diverse student groups, using an intuition-first approach to facilitate understanding of complex concepts. Assisted in grading, provided constructive feedback, and supported hands-on learning in experimental and computational physics.

Piping Design Intern
Sep 2018 – Jan 2019
Designed piping layouts and managed reality capture data for 3D models.
Intertechne Consultores S.A.

- Designed and developed piping layouts, isometric drawings, and material specifications for industrial projects. Assisted in 3D modeling and collaborated with engineers to optimize system efficiency and compliance with industry standards.
- Managed terabytes of reality capture data during as-built projects, transforming raw laser scans into detailed 3D models.

EDUCATION

Ph.D. Physics, NSERC Canada Graduate Scholarship
Jan 2021 – Dec 2025
McGill University

M.Sc. Mechanical Engineering, CNPq Graduate Scholarship
Feb 2019 – Dec 2020
Rio de Janeiro State University

B.Sc. Mechanical Engineering, FAPERJ Scientific Initiation Scholarship
Aug 2013 – Dec 2018
Rio de Janeiro State University