Raphael Silveira e Silva

Belo Horizonte, Brazil | Available for Relocation to the U.S. | Visa Sponsorship Required  
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# Professional Summary

# Senior Mechanical Engineer with 15+ years of experience leading the design, prototyping, and implementation of industrial and automotive solutions. Skilled in 3D surface modeling, electromechanical integration, and the development of functional and visually refined products. Expert in CAD tools including CATIA V6, SolidWorks, Siemens NX, and Autodesk Inventor. Proven track record in transforming engineering concepts into polished, production-ready systems. Currently seeking to contribute hands-on expertise to advanced studio and product design projects in a collaborative, innovation-driven environment.

# Core Competencies

* Advanced 3D CAD: CATIA V6, 3DEXPERIENCE, Siemens NX (GSD), SolidWorks, Inventor
* Surface & Aesthetic Modeling | Parametric Design | Industrial Fixtures
* Parametric Design | DFM/DFA | Rapid Prototyping | BOM Management
* Electromechanical Systems | PLC, Sensors, Actuators, Arduino Integration
* Rendering & Visualization: 3DS Max, SolidWorks Visualize
* Design Documentation & Drawing Standards (ISO/ANSI) | Enovia / 3DEXPERIENCE
* Studio Collaboration | Cross-Functional Communication | Project Ownership
* Client-Facing Communication | Team Leadership | Cross-Functional Alignment

### Selected Projects

**Punch-Cutting System for Citroën C3 XTR Bumper (PSA Project)**

* + *Challenge:* Design a precision cutting machine for mounting holes in plastic trims on a large, externally visible bumper, requiring flawless surface finish and exact positioning.
  + *My Contribution:* Led the full mechanical design using CATIA and Siemens NX. Engineered punch-and-die tools actuated by hydraulic cylinders, with pneumatic positioning systems. Integrated light curtains and sensors for operator safety. The solution was approved, installed on the PSA production line, and adapted for other models.

**Compact UV Curing System (Astergraf)**

* + *Challenge:* Develop a self-driving robotic system for pathogen disinfection during the COVID-19 pandemic.
  + *My Contribution:* As development leader, I designed the complete mechatronic system, integrating an Omron AMR platform with custom sensor arrays (LIDAR, vision) and Arduino-based controls. Personally handled the 3D modeling, weight distribution analysis, and initial firmware programming for sensor and safety system integration.

**Compact UV Curing System (Astergraf)**

* + *Challenge:* Integrate a UVC curing module into a high-speed printing press with less than 2mm clearance to moving parts.
  + *My Contribution:* Designed and prototyped an ultra-compact, water-cooled LED module housing and developed custom hydraulic connections that were unavailable on the market at the required size. Iterated on the design using 3D printing and mockups to validate fit and function before final fabrication. Delivered production-ready equipment with industrial-grade reliability.

**UV Curing System for Metal Printing (CMP Project)**

* + *Challenge:* Create a high-performance UV curing system for a metal printing line, requiring precise control over multiple physical parameters and safety compliance.
  + *My Contribution:* Delivered complete mechanical and electrical design. Programmed Siemens PLC/HMI with PID thermal control, cooling loop, and sensor logic. Compliant with NR-12 safety standards. The project improved process stability and was integrated into two other lines.

# Professional Experience

**SIMA Projetos e Soluções Industriais – Belo Horizonte, Brazil**

*Co-Founder & Engineering Director* | 2016 – Present

Designed, built, and commissioned custom automation systems from concept to final product, leading the mechanical and electromechanical development for clients in healthcare, automotive, and advanced manufacturing.

* Personally handled end-to-end hands-on execution, including mechanical assembly, component welding, electrical panel wiring, and on-site equipment commissioning.
* Engineered and iterated on machines and subsystems for fabrication, focusing on integrating mechanical structures with custom control systems, sensors, and actuators.
* Led multidisciplinary squads as a development leader, fostering a hands-on, collaborative environment focused on rapid prototyping and practical, functional solutions.

**AC Implementos Rodoviários – Contagem, Brazil**

*Mechanical Project Manager* | 2014 – 2016

* Directed the design of mechanical subsystems for trailers and road equipment, including hydraulic, locking, and suspension systems.
* Optimized parts for manufacturability (DFM) and reduced costs through component standardization.
* Coordinated with suppliers and internal teams during prototype testing and full-scale production.

**Fourmec Industrial – Belo Horizonte, Brazil**

*Mechanical Design & Managing Partner* | 2008 – 2014

* Led the design and manufacturing of custom machinery for clients in food processing, packaging, and logistics.
* Applied advanced modeling techniques for sheet metal, structures, and product enclosures.
* Developed automated platforms compatible with ABB/Fanuc robots and integrated pneumatic and hydraulic components to deliver turnkey solutions.

### Personal Projects & Passion for Design

My passion for design and fabrication extends to my personal workshop, where I take ideas from sketch to physical reality.

* **Custom Montessori Bed:** Designed a unique cloud-shaped Montessori bed in Inventor, created detailed fabrication drawings in AutoCAD, and personally built it to meet a specific vision that was unavailable on the market.
* **Walk-in Toy House:** Engineered and constructed a custom walk-in toy house for my niece, managing the project from initial design to final assembly.
* **Therapeutic Game for Social Project:** Modeled a therapeutic game in Autodesk Inventor, detailed laser-cut components in AutoCAD, and sliced the models for 3D printing to support a university social project for the elderly and individuals with learning difficulties.

# Education

**Bachelor of Science in Mechanical Engineering**

Centro Universitário de Belo Horizonte (UNIBH), Brazil – 2021

# Certifications

**Basic Python Programming – Certificate of Completion, 2021**

Acquired foundational skills in Python for engineering applications, including scripting, logic, and basic automation tasks.

# Languages

**Portuguese:** Native | **English:** Fluent | **Spanish:** Working Proficiency

# Work Eligibility

Brazilian citizen | Requires sponsorship | Available for immediate relocation