Raphael Silveira e Silva

Belo Horizonte, Brazil | Available for Relocation | Visa Sponsorship Required  
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# Professional Summary

# Hands-on Mechanical Engineer with over 15 years of experience designing, prototyping, and building automated guided vehicles (AGVs) and complex electromechanical systems from the ground up. Proven track record of leading the full product lifecycle — from concept, CAD design, and prototyping to field testing and production — with a strong focus on manufacturability, durability, and serviceability in harsh environments. Expert in Autodesk Inventor (advanced) and SolidWorks, with deep knowledge of metal fabrication, DFM/DFA, and rapid prototyping. Passionate problem-solver, skilled in multidisciplinary collaboration, and committed to delivering robust, field-ready solutions in fast-paced and high-stakes engineering environments.

# Core Skills & Areas of Expertise

**Robotics & UGV Systems**

* + AGV/AMR design & development, payload & sensor integration (LiDAR, vision systems)
  + Electromechanical packaging & power distribution
  + Autonomous system prototyping and deployment

**Mechanical Design & Fabrication**

* + CAD: Autodesk Inventor (Expert), SolidWorks (Expert), Siemens NX, AutoCAD
  + Fabrication: sheet metal, CNC machining, welding
  + DFM/DFA, FEA (SolidWorks), tolerance stack-up analysis

**System Integration & Prototyping**

* + Rapid prototyping (3D printing), assembly & commissioning
  + Microcontroller integration (Arduino, Raspberry Pi)
  + Field troubleshooting & maintenance planning

# Professional Experience

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

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

Led mechanical and electromechanical design operations, mentoring a multidisciplinary team to deliver advanced robotic, automation, and special-purpose machinery solutions. Full ownership of projects from R&D to production, integrating rapid iteration, rigorous testing, and supplier collaboration.

**Highlighted Automation & Machine Build Projects:**

**Autonomous Robotic Vehicle (AGV/AMR) with Sensor Payload**

* ***Challenge:*** Design a fully autonomous UGV for operation in critical human-centric environments, requiring advanced spatial awareness and high chassis robustness.
* ***My Contribution:*** Led end-to-end development, integrating LiDAR and vision systems on an AMR platform, managing power distribution, electromechanical packaging, and early firmware.
* ***Impact:*** Delivered a field-ready platform meeting operational and environmental demands, directly aligning with NATO-style operational requirements.

**Compact UV Curing System for Offset Press (Harsh Environment)**

* ***Challenge:*** Engineer a precision curing module operating within a 2 mm tolerance in a high-vibration, high-heat printing environment.
* ***My Contribution****:* Applied DFM principles and rapid prototyping to create a compact, durable system, performing tolerance analysis to ensure long-term reliability.
* ***Impact:*** Reduced production downtime and improved output quality for industrial printing clients.

**Punch-Cutting System for Citroën Bumper**

* ***Challenge:*** Develop a precision cutting machine for automotive production, ensuring flawless repeatability and easy maintenance.
* ***My Contribution:*** Designed robust mechanical architecture, collaborating with suppliers for custom metal fabrication.
* ***Impact:*** Delivered a system exceeding OEM quality standards, improving production efficiency.

# Education & Certifications

**Bachelor of Science in Mechanical Engineering**

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

# Languages

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

# Work Eligibility

Brazilian citizen | Requires sponsorship | Available for immediate relocation