

Sebastian Morales Prado

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Principal Mechanical & Systems Engineer

Experimental Hardware · Electromechanical Systems · Mechanism Design

Summary

Principal mechanical and systems engineer specializing in experimental hardware, robotic mechanisms, and electro-mechanical systems operating in real-world environments. Experienced leading hardware development end-to-end, from early research and requirements definition through CAD modeling, prototyping, validation, manufacturing, and system integration.

Strong background in mechanism design, sensing and actuation systems, tolerance analysis, and design-for-manufacturability.

Experienced developing embedded software, sensing pipelines, and computer vision tools that integrate with physical systems.

Known for translating open-ended research questions into working machines that can be deployed, tested, and scaled.

Experience

Clixo — Principal Systems Engineer / Director of Design & R&D

New York, NY | 2018–Present

Joined during the early R&D phase and led development of Clixo's core modular mechanical system from initial material and geometry exploration through global manufacturing and distribution.

- Led end-to-end development of Clixo's modular mechanical platform, overseeing concept development, CAD modeling, prototyping, validation, and production deployment.
- Designed compliant structural components combining flexible polymer materials with embedded magnetic joints, enabling repeated deformation and structural assembly across millions of use cycles.
- Engineered precision assemblies including magnetically coupled joints and ultrasonic-welded polymer components requiring tight tolerances and repeatable high-volume manufacturing.
- Conducted iterative redesigns addressing fatigue, wear, and failure modes while meeting child safety standards including ASTM and EN71 certifications.
- Coordinated a distributed manufacturing pipeline spanning molded components, magnets, printed packaging, and automated packaging systems.
- Implemented DOF improvements that enabled packaging automation and reduced production costs at scale.
- Built and led a multidisciplinary hardware development team while remaining hands-on in mechanical development and final production approvals.
- Platform now distributed in 30+ countries and recognized as one of TIME's Best Inventions of 2025.
- Named inventor on multiple U.S. patents related to modular mechanical systems and manufacturing methods.

MORAKANA — Principal Experimental Systems Engineer (Co-Founder)

New York, NY | 2020–Present

Co-lead an experimental hardware studio developing custom mechanical, sensing, and electromechanical systems exploring interactions between technological infrastructure and biological environments.

- Designed and fabricated custom experimental hardware including modular robotic structures, sensing systems, and large-scale responsive installations operating in public environments.
- Developed a precision 3D microscopic scanning system integrating motion control, high-resolution imaging, and computational reconstruction to capture volumetric biological structures.
- Built sensing systems where fungal mycelium networks interact with custom electronics and environmental signals to create responsive biological-computational interfaces.

- Designed structural frames, custom fixtures, and mechanical assemblies supporting long-duration installations operating continuously in exhibition environments.
- Develop custom software systems in Python and JavaScript for sensor integration, machine control, computer vision, and data processing supporting experimental hardware platforms.

Appropriate Audiences — Robotics & Experimental Systems Engineer

International | 2013–Present

Develop experimental robotic platforms exploring real-time human–machine interaction and robotic systems operating under dynamic and safety-critical conditions.

- Co-developed the *tatoué*. robotic tattoo platform, serving as lead programmer and robotics engineer developing real-time control software translating sound, telemetry data, and live inputs into robotic motion.
- Designed custom actuation heads, motion platforms, and mechanical interfaces enabling precision control of tattoo needles interacting directly with human skin.
- Implemented sensing feedback systems allowing the robot to adjust motion based on the topology and deformation of skin surfaces.
- Integrated actuation hardware, embedded electronics, and real-time software control systems enabling live performance-driven robotic operation.
- Deployed and operated robotic systems across international exhibitions and performances in more than 10 countries.

Crucible — Research Engineer (Advanced Manufacturing & Thermal Systems)

Berkeley, CA | 2015–2016

Partnership across FATHOM · UC Berkeley · NASA Ames · Autodesk

Contributed to the development of an experimental incubation platform for synthetic biology research simulating extraterrestrial (Martian) environmental conditions.

- Designed vacuum-tight chamber architectures using additive manufacturing to support extreme environmental testing.
- Developed custom slicing and toolpath strategies improving sealing performance of FDM-printed components under pressure and vacuum conditions.
- Conducted pressure testing, leak validation, and thermal performance evaluation for chambers operating between –100 °C and +150 °C.
- Named inventor on a U.S. patent related to additive manufacturing methods and sealed chamber architectures.

Technical Skills

SolidWorks · Fusion 360 · Precision Mechanism Design · Electromechanical Systems · Actuation Systems · Sensor Integration Motion Systems · Tolerance Analysis · Static Structural Evaluation · Design for Manufacturability (DFM) · Additive Manufacturing CNC Fabrication · Rapid Prototyping · System Integration · Product Validation · Safety Compliance
 Embedded Systems Integration · Python · Computer Vision · C++ · JavaScript · NodeJS · Networked Systems

Education

M.S., Interactive Telecommunications Program (ITP) — New York University

B.S., Mechanical Engineering — Illinois Institute of Technology

Selected Recognition

TIME Best Inventions 2025 — Clixo

Lumen Prize Gold Award — MORAKANA

Genspace BioInstrumentation Fellow — MORAKANA

Resident — Autodesk Pier 9