Sofía Carolina Quintanilla Galindo

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Profile

Third-year Engineering Physics student at Tecnológico de Monterrey, focused on applied physics, biomimetic design, and the experimental study of materials and optical systems. Experienced in simulation, instrumentation, and mechanical design. Passionate about bridging theory and experimentation to develop nature-inspired solutions for research and technology.

Education

Tecnológico de Monterrey *Aug 2023 – Jul 2027*
B.S. in Engineering Physics (third year)
Relevant coursework: Stochastic Methods, Electrodynamics, Statistical Mechanics, Experimental Optics and Materials.

Experience

Propulsion Lead, Monterrey Rocket Lab *Aug 2025 – Present*
Design and simulation of solid rocket motors. Led manufacturing processes (lathe, CNC, 3D printing) and propellant tests.

Powertrain Coordinator, Formula SAE Tec de Monterrey *Aug 2025 – Present*
Design and fabrication of transmission components using composites. Structural analysis and mechanical integration.

Founder & Director, "Motores de Ideas" *Jan 2025 – Present*
Created a science education program for middle-school students. Coordinated 30+ volunteers for workshops and experiments.

Projects

Biomimetic Rotary Blade Redesign – John Deere *2025*
Redesigned agricultural cutting blades inspired by humpback whale fins, improving efficiency. Simulations in COMSOL.

Photovoltaic Cooling Efficiency – Munters México *2024*
Developed a model predicting solar panel cooling gains in Python. Awarded *1st place* in Munters Innovation Challenge.

Microbial Detection Lab *2024*
Conducted bacterial detection and culture experiments. Introduced to experimental and analytical lab techniques.

Achievements

- **1st Place – Munters México Innovation Challenge (2024):** Recognized for developing a photovoltaic cooling efficiency model using Python and thermodynamic simulation.
- **HackMIT – MIT (2024):** Design of an application to optimize the use of reusable containers on campus.
- **Educational Impact – "Motores de Ideas" Program:** Designed a physics and engineering outreach initiative for middle-school students, reaching over 200 participants.

Technical Skills

Programming: Python, MATLAB, Julia, R
Modeling: COMSOL, ANSYS, SolidWorks, Fusion 360
Manufacturing: Lathe, CNC, 3D printing, composite materials
Data Analysis: Tableau, Excel, statistical modeling
Languages: Spanish (Native), English (C1), French (Intermediate)

Research Interests

Applied Physics · Biomimetics · Materials Science · Optical Systems · Quantum Mechanics · Sustainable Technologies