

RAFAEL MELO

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EDUCATION

B.Eng. Mechatronics Engineering (Control & Automation) — Unicamp 2024 – 2029
State University of Campinas (Top 3% public university in Latin America) - GPA: 3.6/4.0 - Top 2 in class Campinas, Brazil
• Perfect grades in: Algorithms & Programming (Python), Data Structures (C), Calculus I/II/III, Linear Algebra
• Coursework: Digital Logic Circuits (VHDL/FPGA), OOP (Java), Physics Lab (NumPy/Matplotlib), Statics & Dynamics

Visiting Researcher — University of West Bohemia Jan – Mar 2026
Merit-based exchange program in Robotics & Computer Vision Plzeň, Czech Republic
• Developed the 3D Vision System for an Autonomous Mars Rover for the European Rover Challenge (ERC)
• Resulted in 2 scientific papers submitted to international peer-reviewed journals

EXPERIENCE

Quantitative Finance Analyst — Tivio Capital Jul 2026
Summer internship in quantitative finance and data science São Paulo, Brazil
• Applying statistical modeling and data-driven strategies in quantitative finance research
• Engineered a reproducible end-to-end Monte Carlo simulation & optimization pipeline with over 8 million portfolios

President — Unicamp Entrepreneurship League (Liga Empreendedora) Aug 2025 – Present
Largest entrepreneurship organization at Unicamp Campinas, Brazil
• Lead a 50-person team; impacted 3,000+ students and generated 500k+ social media views
• Partners: Itaú, XP, Nubank, Kaszek Ventures, Atlantico VC, Fundação Estudar
• Organizing Hack2L hackathon (Jul–Aug 2026) with confirmed sponsors: AWS, ElevenLabs, Tropicália, Gorilla
• Raised over US\$22k for Liga Empreendedora.

Undergraduate Researcher — NVIDIA · LIDS/Unicamp Jun 2025 – Sep 2026
Synthesis of 3D Brain MRI using Diffusion Models · Advisor: Prof. Dr. Alexandre Xavier Falcão Campinas, Brazil
• NVIDIA-supported research on generative AI for medical imaging; auditing graduate-level Deep Learning course
• Developing latent diffusion model pipeline (VAE + ControlNet) for synthetic 3D MRI generation (BraTS dataset)

Undergraduate Researcher — LAMAR/Unicamp Jun 2025 – Oct 2026
ML Surrogate Modeling for Journal Bearing Dynamics · Advisor: Prof. Thales F. Peixoto Campinas, Brazil
• Built a 4,500-point dataset via Reynolds equation solver (Gauss-Seidel/SOR) and trained RF/XGBoost/ANN models
• Implementing Random Forest on dynamic coefficient prediction for thrust bearings
• Presenting at MECSOL 2026 (ITA, Oct 2026)

Researcher — Geomatics, Natural Hazards and Risk (Journal) 2025 – May 2026
Remote Sensing & Unsupervised ML · Pantanal Environmental Monitoring Brazil
• Published: "A reproducible regime-aware unsupervised framework to reduce flood-pulse confounding in wetland disturbance monitoring: Pantanal (2020–2025)"

Perception Division — Unicamp E-racing (Formula Student) Apr 2024 – Jul 2025
Autonomous Vehicles & Robotics Campinas, Brazil
• Built cone detection pipeline (YOLO + LiDAR fusion, ROS2) for a fully autonomous driverless Formula electric car
• Project secured 3rd place in Brazil's National Autonomous Vehicles Competition (top 20 universities)

AWARDS & ACHIEVEMENTS

1st Place. Super Liga X National Entrepreneurship Competition 2025
3rd Place. National Autonomous Vehicles Competition (Robocar Race) 2025
Harvard Business School. Aspire Leaders Program 2025
3 Published Books (co-author & project coordinator, team of 95 people) 2019 - 2021
Feature-length documentary on social inequality (school-wide award) 2020

SKILLS

Languages: Python, C, Java, SQL, VHDL
ML / AI: PyTorch, Scikit-learn, NumPy, Pandas, Matplotlib · Diffusion Models, Computer Vision, Diffusion Models
Tools: Git, Linux, ROS2, GitHub
Human Languages: Portuguese (Native), English (Fluent – C1), French (Intermediate), Spanish (Intermediate)