Rafael Melo

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EDUCATION

UNICAMP (State University of Campinas) - BEng (Hons) Mechatronics Engineering (Control and Automation)
GPA: 3.7/4.0 - Top 3%
2024 - 2030 (6 Years)
Built a strong foundation in software development and advanced mathematical analysis. I gained proficiency in Python through "Computer Algorithms and Programming" and enhanced my skills in C with "Data Structures", both achieving maximum grades. Through "Calculus I, II, & III" and "Analytic Geometry & Vectors," I consistently also achieved maximum grades over one and a half years, mastering Linear Algebra, Vector Calculus, Limits, Derivatives, Integrals, and Ordinary & Partial Differential Equations.
My studies also covered "Digital Logic Circuits," where I learned to use the VHDL language and implemented a final course project on an FPGA board and, in "Experimental Physics Laboratory", I gained practical skills in measuring uncertainties and errors, analyzing data with NumPy and Matplotlib, and applying scientific procedures in experiments.

EXPERIENCE

LIDS - Laboratory of Image Data Science at UNICAMP
Undergraduate Research Project - Advisor: Prof. Dr. Alexandre Xavier Falcão
Researcher in Computer Vision and Machine Learning **Jun/2025 - Present**
After achieving the highest grade in "Data Structures" in my class, I was selected for a unique research position by the course professor, Dr. Alexandre Xavier Falcão (one of Brazil's most influential and highly cited computer science researchers). I am currently engaged in advanced studies in Image and Signal Processing, Machine Learning, Computer Vision, and Graph Theory. This phenomenal experience is further enhanced by auditing a graduate-level course in image processing.

LAMAR - Laboratory of Rotating Machines at UNICAMP
Undergraduate Research Project - Advisor: Thales Freitas Peixoto
Numerical Modeling of Journal Short Bearings using Machine Learning and AI **Jun/2025 - Present**
During my second year at Unicamp, I ranked second in a Statics class of 71 students, which led my professor to invite me to a research project on the dynamics of journal short bearings. The study involves numerical modeling of hydrodynamic behavior using Reynolds' equations to build a dataset for application of machine learning in predicting dynamic coefficients. This work has deepened my knowledge of fluid mechanics, nonlinear dynamics, numerical methods and machine learning, while preparing me to integrate AI into classical mechanical analysis and real world problems.

Unicamp Entrepreneurship League
President **Aug/2025 - Present**
I joined UNICAMP's Entrepreneurship League in June 2025, and in just four months, I was promoted to President. In this role, I have the opportunity to interact with and learn from the most influential entrepreneurs and C'levels in Brazil, receive individualized mentorship from them, and organize events. I lead a team of 15 people, focusing on developing startups and products to enhance the university's entrepreneurial ecosystem.

Unicamp E-racing (Formula Student Team)
Member of Perception Division **Jun/2024 - Jun/2025**
Developed and implemented a fully autonomous (driverless) Formula electric car. Over six months, I progressed from basic to advanced proficiency in Python, Linux, Git, ROS2, Computer Vision, and Image Processing while developing a fully autonomous scaled vehicle. This project secured 3rd place in Brazil's National Autonomous Vehicles Competition, competing against the top 20 universities in the country.

ASPIRE LEADERS PROGRAM by HARVARD BUSINESS SCHOOL **Jun/2025 - Present**

Business and Leadership

Participating in Harvard University's four-month online Aspire Leaders Program was an exceptionally constructive experience. A key highlight was the invaluable opportunity to interact with a diverse cohort of individuals from all over the world, fostering a global perspective. The program facilitated direct connections with top-tier educators from Harvard, MIT, and Stanford, from whom I gained significant insights into entrepreneurship, robotics, and AI.

English Language Instructor | CNA School of Idioms **Jan/2021 - Jun/2021**

Embraced the opportunity to teach English classes for six months, guiding 30 children and adults from basic and from intermediate levels. This immersive experience was pivotal in my journey to mastering English fluency and substantially honing my oratory and communication skills.

Documentary: Barueri: Comércio e Educação **Jan/2021 - Nov/2021**

High School Project Lead | Documentary on Social Inequality

Led a team of 10 people in producing the first feature-length documentary to explore a sociological perspective on my hometown. The project highlighted social inequality and examined the far-reaching consequences of limited access to education on society. Honored with a school-wide award in recognition of the project's impact and pioneering nature.

3 Published Books: **Jan/2018 - Dec/2021**

Além de Belas Palavras / Jovens Entre(linhas) / Cofre de Pensamentos

Co-Author & Project Coordinator

Co-authored three books published during high school, serving as project coordinator for two of them and leading teams of over 50 people in each. Wrote about social, literary, and philosophical topics, including societal pressure on individuals and the perception of time in modernity.

SKILLS & INTERESTS

Technical

Python (Matplotlib, Numpy, Pandas, Scikit Learn), C, Java, VHDL, Git, Computer Vision, Image Processing, Machine Learning, Windows, Linux, ROS2, Microsoft Office, Object Oriented Programming, Data Structures.

Languages

Portuguese (Native), English (Fluent - C1), Intermediate French and Spanish

Interests

Entrepreneurship, Artificial Intelligence, Robotics, Computer Vision, Leadership, Innovation and passionate about Music and Arts.