João Felipe Gueiros

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Education

Bachelors of Science in Mechanical Engineering, Technion, Haifa, Israel **January 2021 – March 2025**

Research

Lab Intern at the Fluids and Elasticity Lab (Spinodal Start-up) - Technion **April 2024 – March 2025**

- Developed all Python-based control algorithms for catheter movement via pump actuation, integrating an Arduino-based interface for milimetric hinput execution.
- Assisted in a preclinical surgery on a pig, testing and refining the catheter's performance for interventional cardiology.

Lab Research Project at the Autonomous Robots Lab - Technion **Feb 2024 – December 2024**

- Build from scratch a robotic gripper with integrated sensing that uses LSTM (Long short-term memory) neural networks to distinguish simple geometric shapes, such as spheres and cubes and achieved a 90% accuracy

Lab Research Project at the Lindell Lab - Technion **August 2019**

Project: Can resistance to phage infection in cyanobacteria be explained by lack of expression of host and phage tRNA genes?

- Investigated phage resistance in cyanobacteria by analyzing tRNA expression across different strains, utilizing techniques like RNA extraction, reverse transcription, and qPCR.
- Discovered that a specific strain's lack of tRNA expression could explain its resistance to phage infection, contributing to the understanding of phage-host interactions in marine environments.

Clubs

Rocketry Club Propulsion Team Member - Technion **July 2024 – November 2024**

- Designed and optimized a rocket nozzle using SolidWorks
- Manufactured and ran ignition tests for fuel sources

F1tenth team at the Multi-Robot Systems lab - Technion **Jan 2024 – August 2024**

- Implemented a partial autonomous tuning solution combining the OptiTrack camera system and the car's odometry, boosting the team's productivity.
- Analyzed error in the car's perceived position in the SLAM to improve the pure pursuit algorithm.

Publications

João Felipe Gueiros et al., "*Deep Learning vs. Black-Scholes: Option Pricing Performance on Brazilian Petrobras Stocks.*" Preprint, 2025. [PDF].

Awards

Quarter finalist in F1tenth racing competition (ICRA Yokohama, Japan) **May 2024**
Dean's List Excellence Award **Spring 2023**
Second Place in the Biomedical Engineering Hackathon (Technion-BME) **June 2022**

- Pitched a teddy bear toy that checks for allergens inside classrooms and enables a safe space for highly allergic children.

Bronze Medalist at OBA (Brazilian Olympiad of Astronomy) **June 2019**

Skills

Python (Scikit-Learn, Pytorch, Matplotlib, NumPy) | MATLAB | Simulink (Control Toolboxes) | Robot Operating System 2 (ROS2) Gazebo | SolidWorks/CREO | Linux | Git

Languages

English - C2 | Portuguese - C2 | Spanish - C1 | Hebrew - A2

Certifications

Code Foundation for ROS | e-Series Core Track

Relevant Coursework

Probability and Statistics|Machine Learning for Scientists and Engineers|Hybrid Dynamics|Control Theory|Advanced Control Lab
Introduction to Robotics|Advanced Robotics Lab|Introduction to Scientific and Engineering Computing (Numerical Methods)