

João Felipe Gueiros

LinkedIn | Personal Website

Education

Bachelors of Science in Mechanical Engineering, Technion, Haifa, Israel

January 2021 – March 2025

Experience

Lab Intern at the Fluids and Elasticity Lab (Spinodal Start-up) - Technion

April 2024 – March 2025

- Developed all Python-based control algorithms for surgical robotics, catheter movement via pump actuation, integrating an Arduino-based interface for millimetric input execution.
- Assisted in a preclinical surgery on a pig, testing and refining the performance of the robotic catheter 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

Member of the 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.

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.

Publications

João Felipe Gueiros, Hemanth Chandravamsi, Steven H. Frankel (2025), "Deep Learning vs. Black-Scholes: Option Pricing Performance on Brazilian Petrobras Stocks."

- Developed a deep residual network with a custom hybrid loss function to price Petrobras (PETR4) call options, outperforming the Black-Scholes model.
- Achieved a 64.3% reduction in mean absolute error and demonstrated superior accuracy for options with long expiration periods on the test set.

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.

Skills

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

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)