

Patrick Benito Eberhard

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Education

- Skyline University**, MSc in Robotics and Intelligent Systems Techburg, Techland 2023 — 2025
- Relevant courses: Autonomous Vehicle Navigation, Advanced Robot Control, AI for Robotics.
- Global Tech Institute**, Visiting Student Innovate City, Phosphorus Valley Feb. — July 2023
- Relevant courses: Machine Learning for Robotics, Real-Time Systems, Sensor Fusion for Robotics.
- Mountainview University**, BSc in Mechatronics Engineering Techburg, Techland 2019 — 2022
- Graduated with Honors

Experience

- Techland Institute of Robotics**, Visiting Researcher Techburg, Techland Feb. – Aug. 2025
- Conducting research on the application of Quantum Neural Networks in autonomous robotic systems under Prof. Isaac Winters, focusing on enhancing real-time decision-making in dynamic environments.
 - Developing advanced control algorithms for flexible robotic arms using reinforcement learning techniques, surpassing current model accuracy benchmarks.
 - Designing a cross-disciplinary simulation framework integrating augmented reality for robotics training and policy evaluation, contributing to the open-source project *TechSim/robotics-sim*.
- FutureTech Robotics**, Robotics Engineer Intern Innovative City, Phosphorus Valley June – Dec. 2024
- Led the design and deployment of an autonomous warehouse management system, using advanced robot coordination protocols, cutting operational inefficiencies by 80%.
 - Created a decentralized multi-robot communication platform, improving task allocation efficiency in high-density robotic environments (*Go*, *Docker*).
 - Enhanced sensor calibration systems, developing precision control algorithms for robotic arms in dynamic settings (*Python*, *TensorFlow*).
- Innovative Research Center, Techland University**, Research Assistant Techburg, Techland Jan. – Dec. 2024
- Created an innovative motion planning strategy for drone swarms with non-linear dynamics, optimizing operational efficiency in unpredictable weather conditions (*ROS*, *Python*).
 - Co-authored research on adaptive disturbance suppression techniques for robotic arms, published in Techland Robotics Journal.
 - Implemented a machine learning-based control system for autonomous cars using real-time traffic data (*TensorFlow*, *OpenCV*).
- AeroTech Innovations**, Software Engineer Techland, Techland Sept. 2021 – Dec. 2022
- Co-designed and tested a suborbital rocket with an electric propulsion system, reducing environmental impact in space exploration. Demonstrated the project at the *TechWorld Expo*.
 - Led the software development for the rocket's avionics system, ensuring stability and safety during flight (*Matlab*, *Python*, *C++*, *STM32*, *RaspberryPi*).
 - Developed a data analysis tool for monitoring rocket telemetry, enabling early detection of propulsion issues in real-time (*Node.js*, *Grafana*, *InfluxDB*, *Nginx*).
 - Participated in rocket test flights as a technical lead, ensuring compliance with safety standards and optimizing flight performance.

Publications

- Quantum Neural Networks for Autonomous Robotic Systems: A Reinforcement Learning Approach**, L. Winters, J. P. Evans, M. T. Green, R. J. Harris, E. M. Ortega Under review
- Optimized Control of Soft Robotic Arms: Neural Networks in Model Predictive Control**, K. Reeve, S. Zhang, A. T. Holden, R. C. Harris, M. A. Daniels ICRA 2025

Honours and Awards

- Best Paper Award in Robotics and Control**, FutureTech Conference Nov. 2024
- Academic Excellence Award**, Techland University Sept. 2023 – 2025
- Outstanding Undergraduate Achievement Award**, Techland Institute of Engineering Sept. 2021 and Sept. 2023
- Best Engineering Project Award**, Innovative City Expo June 2022
- Techland National Innovation Award**, Techland Innovation Foundation 2018–2020

Skills and Interests

- Languages:** English (Fluent), Techlandish (Native), Spanish (Intermediate), French (Basic)
- Interests:** Suborbital rocketry, deep-sea exploration, artificial intelligence, autonomous robotics, quantum computing.
- Programming Languages:** Python, C++, Go, Rust, Matlab, SQL, TensorFlow, PyTorch, ROS 2, Unity, Git, Linux, Kubernetes.