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.