Ramón Ros Trujillo

Machine Learning Researcher specializing in scalable, structure-aware ML and dynamical systems modelling

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Current positions

Research Associate, Machine Learning

Apr 2026 — Present

University of Bristol, Engineering Mathematics Research Group · Bristol, ES

Conducting research in structure-preserving machine learning for dynamical systems, with a focus on methods that encode invariants and symmetries to improve reliability, interpretability, and long-horizon prediction.

Education

PhD in Applied Mathematics

Jan 2022 — Apr 2026

University of Bristol · Bristol, UK

The focus of my thesis was structure-preserving model reduction and inference for high-dimensional dynamical systems.

- Developed data-driven algorithms for extracting, identifying, and enforcing invariants and symmetries in time-series data.
- Developed data-driven methods for structure-preserving approximation of the Koopman operator, enabling spectral analysis and estimation of dynamical systems with continuous symmetries.
- Constructed thermodynamically consistent reduced-order models via the Mori–Zwanzig formalism, supporting stochastic coarse-graining of high-dimensional dynamical systems.

MEng in Mechanical Engineering

Sept 2016 — Sept 2021

University of Bristol · Bristol, UK

Awarded Master of Engineering with First Class Honours.

Work Experience

Research Engineering Intern, Optical Communications

July 2019 — July 2020

Airbus Operations LTD · Bristol, UK

Designed the mechanical, electronic, and embedded control systems for a closed-loop fast steering mirror used in a 10 Gb/s air-to-air laser communication demonstrator, enabling precise beam alignment with a fiber optic receiver.

Engineering Intern, Embedded Systems

Apr 2018 — Sept 2018

Bristol Robotics Laboratory · Bristol, UK

Designed the electronics and STM32 embedded firmware for a skydiving altimeter, implementing a Madgwick filter sensor fusion algorithm for real-time orientation estimation from accelerometer and gyroscope data.

Selected publications

Data-driven symmetry detection for dynamical systems

Dec 2025

Ramon Ros, Andrew Lawrie · Applied and Computational Harmonic Analysis (under review)

Developed algorithms for symmetry detection in dynamical systems by reconstructing infinitesimal generators from trajectory data (ODEs and PDEs), enabling dimensionality reduction, invariant solution construction, and phase-space analysis.