

Vinicius Dias

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Interests	Sequential statistical inference; online learning; market microstructure and prediction-market mechanisms; Bayesian methods at the intersection of neuroscience and machine learning.	
Education	University of Nottingham — MEng Aerospace Engineering	2023–2024
	Upper Second-Class Honours (2:1). <i>Thesis:</i> “A Comparative Study of YOLOv8 Algorithm Implementation for Detection of Surgical Instruments”. Supervisor: Dr Abdelkhalick Mohammad. Reported 76.3% mAP across YOLOv8 variants on the Cholec80 dataset, identifying class imbalance, scene blur and inter-procedure domain shift as dominant sources of residual error.	
	University of Nottingham — BEng Aerospace Engineering	2020–2023
	Upper Second-Class Honours (2:1).	
Experience	LTS Research, London — Quantitative Researcher	Feb 2026 – Present
	<ul style="list-style-type: none"><i>Ingestion:</i> Engineered Python pipelines (classes, threading, websockets, JSON parsing) ingesting live order-book snapshots and price updates from multiple exchanges into a TimescaleDB time-series store.<i>Infrastructure:</i> Deployed and managed a TimescaleDB instance under Docker on a remote server; designed schemas, hypertables and indexes in PostgreSQL/TimescaleDB for high-frequency market data.<i>Inference:</i> Applied statistical inference techniques on real-time order-book data, including polynomial curve fitting, order-flow-imbalance analysis and bid–ask-spread decomposition, to extract microstructure signals informing probabilistic price-movement forecasts.	
	University of Nottingham — Research Assistant (ML)	Jan 2023 – Jul 2023
	<ul style="list-style-type: none">Built a continual-learning model for surgical-tool identification, exploring sequential adaptation under distribution shift.	
Projects	<ul style="list-style-type: none"><i>Surgical-instrument detection (MEng thesis).</i> Conducted a comparative study of YOLOv8 architectures (n/s/m/l/x) for laparoscopic-tool detection on the public Cholec80 dataset. Built the training pipeline in a Linux/VirtualBox environment using Roboflow for annotation; evaluated mAP, IoU–recall trade-offs and per-class average precision, reporting 76.3% mAP and identifying class imbalance, scene blur and visually similar tool classes as the dominant sources of residual error.<i>Lunar rover sample mission.</i> Leveraged MATLAB to simulate critical mission phases including Hohmann transfers, powered-descent initiation and retrograde burns for orbital insertion.<i>Ground-effect vehicle.</i> Researched and analysed ground-effect vehicles, reviewing aerodynamic performance across wing, fuselage and airframe configurations using JavaFoil and XFLR5.	
Skills	<i>Languages</i>	Python, SQL, Java, JavaScript, BASH
	<i>ML & statistics</i>	PyTorch, NumPy, SciPy, statsmodels
	<i>Data & systems</i>	PostgreSQL, TimescaleDB, Docker, Linux
	<i>Tools</i>	Git, LaTeX
Reading	Working through Bishop, <i>Neural Networks for Pattern Recognition</i> ; Hastie, Tibshirani & Friedman, <i>The Elements of Statistical Learning</i> . Tracking recent work on prediction-market making and alternatives to the Logarithmic Market Scoring Rule (LMSR) — e.g. Dalen, “Toward Black–Scholes for Prediction Markets” (2025).	