

ABOUT ME

I am a proactive researcher building production-ready machine learning systems for simulation, prediction, and optimization problems. My commitment to applying this to solve real-world challenges is reflected in my research, teaching, outreach, and my hobbies.

SKILLS

Neural ODEsPyThon

Inverse problems

Diffusion/Flow matchingGNNs

SimulationTransformers

Differentiable programming

Distributed TrainingCI/CDPDEs

Finite Elements/Volumes

OpenMPMPIUDEs

Foundation ModelsForecasting

Reduced-Order Modelling

Interpersonal: Teamwork, cross-cultural communication (fluent in 4 languages).

Work ethic: Rigour, adaptability, efficiency in dynamic and fast-paced environments.

TOOLS

C/C++CUDAPython

JuliaJAXGitAWSLinux

TensorFlowPyTorchDocker

RESEARCH INTERESTS

- Model Adaptation
 - Meta-learning, few-shot learning
 - Out-of-distribution generalisation
 - Test-time training, in-context learning
- Production Machine Learning
 - Computer Vision, Pattern Recognition
 - Time-series and language modelling
 - Generative AI and foundation models
- AI for Science
 - Physics-Informed AI for solving PDEs
 - Surrogate modelling of complex systems
 - Differentiable programming at scale

LANGUAGES

English●●●●●

French●●●●●

Japanese●●●○○

Spanish●●○○○

ROUSSEL DESMOND NZOYEM

ML researcher specialising in rapidly adaptable generative systems for sequential data at scale

rd.nzoyemngueguin@bristol.ac.uk

3-4 Lees Parade, Uxbridge, UK

+44 7878430616

https://ddrous.github.io

rousseau-desmond-nzoyem

github.com/ddrous



RESEARCH & WORK EXPERIENCE

Machine Learning Researcher | AMII, University of Alberta | Edmonton, CA

November 2025 — Present

- Accelerating in-context learning for scientific machine learning, digital twins, and world models
- Advised by Dr Bahareh Tollooshams

Teaching Assistant | University of Bristol | Bristol, UK

January 2022 — September 2025

- Collaborated with faculty across multiple departments to support 200+ students in AI, HPC, Computer Architecture, and Cloud Computing courses
- Nominated for the Bristol Teaching Awards for excellent lecture quality and student impact

Data Science Internship | SLB (Schlumberger) | Abingdon, UK

June 2024 — September 2024

- Scaled Graph Neural Network (GNN) inputs by 10X, enabling production-scale modelling of large-scale PDE systems
- Implemented novel JAX GNN layers using Jraph, and achieved 2X speedup compared to PyTorch's PyG
- Achieved zero-shot super-resolution and transfer learning from small to large graphs for reservoir simulation

PhD Summer Projects | HPC Research Group & Bristol Robotics Lab. | Bristol, UK

May 2022 — August 2022

- Extensively explored path planning and stable grasping under disturbance within Mujoco
- Integrated differentiable physics simulators (NVIDIA WARP, MuJoCo MJX) for robotic control and spatial simulation
- Accelerated algebraic multigrid solvers by using GNNs, benchmarking across DGL, PyG, and Jraph frameworks

MSc Internship | Jacques-Louis Lions Laboratory (Sorbonne University) | Paris, FR

February 2021 — July 2021

- Developed physics-based generative models for complex, non-linear dynamical systems, simulating ice floe fracture using mass-spring-damper (MSD) systems and the Francfort-Marigo model
- Developed an interactive software for MSD percussion and fracture simulation using Python's Flask
- Led to my MSc thesis "Fracturing of ice floes by impact in a granular mode", supervised by Prof Stéphane Labbé

MSc Internship | Research Institute Mathématiques Avancées (IRMA) | Strasbourg, FR

June 2020 — August 2020

- Addressed an inverse problem using a VNet architecture for the supervised reconstruction of a domain's density, with the radiative transfer equation (RTE) solved via a Finite Volume scheme to generate data.

EDUCATION

PhD in Machine Learning (Interactive AI) | University of Bristol | Bristol, UK

September 2021 — February 2026 (Anticipated)

- Developing efficient meta-learning algorithms and foundation models for out-of-distribution generalisation in sequential data
- Building production-ready implementations in PyTorch and JAX, achieving 10X speedups through optimised kernels
- Published 4+ first-author papers at top-tier venues (ICLR, CoLLAs, SuperComputing)

MSc in Applied Mathematics (CSMI) | University of Strasbourg | Strasbourg, FR

September 2019 — September 2021

- Modelisation, simulation, and optimisation of physical systems on high-performance computing clusters
- Theoretical and practical analysis of partial differential equations, signal processing, and deep learning
- Completed the degree with exceptional distinction (FR: 18.1/20—Excellent, UK: 1st, US: 4.0)

BSc in Mathematics | Aix-Marseille University | Marseille, FR

November 2017 — July 2019

- Strong accent on statistics, algebra, advanced calculus, and numerical analysis; achieved with 15.25/20

Associate degree in Mechatronics | Oshima College of Technology | Oshima, JP

April 2017 — June 2019

- Intensive training focusing on mechanical, electrical, and computer science engineering
- Assembly languages for the CASL and CASL II machines

Associate degree in Computer Science | University of the People | Pasadena, USA

January 2017 — April 2019

- Theoretical and applied computer science followed by web and software development projects
- Assembly language and low-level computer architecture

OUTREACH & VOLUNTEERING

Outreach Ambassador, Widening Participation Tutor
University of Bristol | Bristol, UK
September 2022 — Present
I lead the [CodeMakers](#) initiative to foster curiosity in young students with after-school programming activities. We also deliver STEM sessions to aspiring UoB students.

Volunteer Private Instructor
ExamStar | Bristol, UK
September 2022 — July 2024
Affordable mathematics lessons for primary and secondary school pupils via Zoom and MS Teams.

Volunteer Language Tutor
UoB Global Lounge | Bristol, UK
September 2022 — December 2022
Bi-weekly position as a French language tutor at the Global Lounge's Language Café.

Volunteer Staff
University of Bristol | Bristol, UK
September 2022
I worked aboard the SS Great Britain to set up and evaluate exhibitions for the FUTURES Festival of Discovery.

Private Instructor
Complétude | Strasbourg, FR
January 2020 — January 2021
Weekly monitoring of high school students in mathematics and computer science with group tutoring during holidays.

TRAINING & CERTIFICATES

AWS Machine Learning Foundations 2022
Udacity — October 2022

React Front to Back 2022
Packt — September 2022

Deploying a Model for Inference at Production Scale
NVIDIA — August 2022

Introduction to Higher Education (HE) Teaching
UoB — January 2022

Electrotechnique I
EPFL — December 2015

SERVICES

Reviewer for **ICLR'25'26**

Top Reviewer for **ICML'25**

Reviewer for **NeurIPS'25**

Reviewer for **TMLR**

Reviewer for **EuroPAR'24**

Associate degree in Maths. and Phys. Sci. | **Polytechnique (NASEY)** | Yaoundé, CMR
September 2014 — April 2017

- First two years (MSP) consisting of mathematics and physics common core subjects
- Ranked 6th out of more than 4,000 candidates in the national entrance exam

GCE A Levels | **Gov. Bilingual High School B'da** | Bamenda, CMR
September 2007 — July 2014

- Série C, with 15.65/20 (mention "Bien")

RECENT PROJECTS

In-Context Learning of Time Series (*September 2025*)

- Led a team of two to develop a competitive entry for the Mitsui Challenge (Kaggle), achieving high-accuracy forecasts of commodity prices under volatile market conditions
- Engineered and untangled time-lagged financial time series to uncover predictive dependencies and empirically test the Efficient Market Hypothesis

WARP for Weight-Space Learning (*June 2025*)

- Assembled a team of PhDs and postdocs from UK, France, and the USA to redefined test-time sequence modelling
- Led to the preprint "Weight-Space Linear Recurrent Neural Networks"
- Code: <https://github.com/ddrous/warp>

MJ-Warp for Robotics Simulation (*May 2025*)

- Exploring automatic differentiation and gradient-free generalisation in-simulation with the open-source MuJoCo Warp
- Ongoing project (code available soon)

SELECTED PUBLICATIONS

Language Models Do Not Embed Numbers Continuously
A Davies, [RD Nzoyem](#), N Ajmeri, T Silva Filho
AAAI 2026 Student Abstract & Poster Program (2026)

Towards Foundational Models for Dynamical System Reconstruction: Hierarchical Meta-Learning via Mixture of Experts
[RD Nzoyem](#), G Stevens, A Sahota, DAW Barton, T Deakin
SCOPE Workshop @ ICLR 2025

Neural Context Flows for Meta-Learning of Dynamical Systems
[RD Nzoyem](#), DAW Barton, T Deakin
International Conference on Learning Representations (ICLR) 2025

Reevaluating Meta-Learning Optimization Algorithms Through Contextual Self-Modulation
[RD Nzoyem](#), DAW Barton, T Deakin
Conference on Lifelong Learning Agents (CoLLAs) 2025

A comparison of mesh-free differentiable programming and data-driven strategies for optimal control under PDE constraints
[RD Nzoyem](#), DAW Barton, T Deakin
SuperComputing (SC) 2023 Workshop on AI4S

SELECTED PREPRINTS

Weight-Space Linear Recurrent Neural Networks
[RD Nzoyem](#), N Keshtmand, I Tsayem, DAW Barton, T Deakin
arXiv Preprint (2025)

FLEX: Feature Importance from Layered Counterfactual Explanations
N Keshtmand, [RD Nzoyem](#), J Clark,
(2025)

Learning to Learn Sequential Dynamics
[RD Nzoyem](#)
(2025)

OTHER SERVICES & RESPONSABILITIES

- **24-25th June 2025** — I co-organised the Joint UKRI CDT Conference in Artificial Intelligence, Machine Learning & Advanced ComputingInteractive Artificial Intelligence / Practice-Oriented Artificial Intelligence
- **26-27th March 2024** — I co-organised The Interactive AI Spring Research Conference

TALKS

- (10 June 2025, University of Bristol, Bristol, UK) **Workshop on Scientific Machine Learning in the Faculty of Engineering** — "Weight-Space Linear Recurrent Neural Networks"
- (13 Feb 2025, University of Bristol, Bristol, UK) **EPS Seminar Series + Engineering Design Society** — "Neural Context Flows for Meta-Learning of Dynamical Systems"
- (13 Nov 2024, Institute of Physics, London, UK) **2nd workshop on Physics Enhancing Machine Learning in Applied Mechanics** — "Differentiable Programming for Mesh-Free Fluid Control"
- (10 Mar 2023, CMU Africa, Kigali, Rwanda) **Graduate Degree Student Seminar** — "Emerging Techniques and Applications of Graph Neural Networks"

AWARDS AND SCHOLARSHIPS

- **Financial Assistance** by CRM (May 2025) — Assistance for all expenses to attend the Mathematical Foundations of Data Science thematic programme at the CRM in Montréal.
- **Financial Assistance** by ICLR (March 2025) — Funding for registration, travel, and accommodation to present multiple research papers at ICLR'25 in Singapore.
- **CDT Studentship** by UK Research and Innovation (June 2021) — Fully-funded scholarship to pursue a PhD within the Interactive AI CDT at the University of Bristol.
- **MEXT (Monbukagakusho)** by The Japanese Government (November 2016) — For this prestigious international scholarship, I was the only one chosen amongst hundreds of candidates.
- **Fondation Hoffmann** by University of the People (April 2017 & April 2018) — Scholarship granted (and renewed) to fully support assessment fees.
- **Excellence Award** by The President of the Republic of Cameroon (July 2015 & July 2016) — Prize awarded for two consecutive years for my outstanding accomplishments at Polytechnique Yaoundé.
- **Excellence Award** by PKFokam Institute of Technology (July 2014) — For my fourth place at the PKFokam Excellence national mathematical olympiad.
- **Excellence Award** by Les Brasseries du Cameroun (October 2014) — Grant awarded to the best student at the GCE A-level in every region of Cameroon.

REFERENCES

Dr. Tom Deakin (HPC Research Group, University of Bristol)

tom.deakin@bristol.ac.uk — +44 11 74 55 11 88

Pr. David Barton (University of Bristol)

David.Barton@bristol.ac.uk — +44 11 74 56 00 18

Pr. Christophe Prudh'homme (IRMA, Unistra)

prudhomme@math.unistra.fr — +33 3 68 85 00 89

HOBBIES & PERSONAL SKILLS

Video games and coding: Fan and designer;

Cinema and music: Composition, documentary movies;

Football: Regular practice at the amateur level;

Traveling: Loves visiting the farthest corners of Earth;

Languages: English & French (*native*), Japanese (*proficient*), Spanish (*basic*).