Ryan Campbell

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Research Interests

Multivariate extreme value theory and its applications, dependence modelling, machine learning.

Education

2021–2025   PhD Statistics, Lancaster University
Thesis: A geometric interpretation of multivariate extreme value analysis
Supervisor: Jennifer L. Wadsworth

2019–2020   MSc Mathematics & Statistics, McGill University
Thesis: Deterministic Gaussian averaged neural networks
Supervisor: Adam Oberman

2015–2018   BSc Mathematics, McGill University
Research project: Semiparametric modelling of max-stable processes using Kendall's tau
Supervisor: Johanna Nešlehová

Publications

[1] L.M. André, **R. Campbell**, E. D'Arcy, A. Farrell, D. Healy, L. Kakampakou, C. Murphy, C.J.R. Murphy-Barltrop, M. Speers. Extreme value methods for estimating rare events in Utopia. *Extremes*, 1–23, 2024.

[2] J. L. Wadsworth and **R. Campbell**. Statistical inference for multivariate extremes via a geometric approach. *Journal of the Royal Statistical Society Series B: Statistical Methodology*, (86)5: 1243–1265, 2024.

Preprints

[1] **R. Campbell** and J. L. Wadsworth. Piecewise-linear modeling of multivariate geometric extremes. *arXiv:2412.05195*, 2024.

[2] I. Papastathopoulos, L. de Monte, **R. Campbell**, H. Rue. Statistical inference for radially-stable generalized Pareto distributions and return level-sets in geometric extremes. *arXiv:2310.06130*, 2023.

[3] **R. Campbell**, C. Finlay, and A. M. Oberman. Adversarial Boot Camp: label free certified robustness in one epoch. *arXiv:2010.02508*, 2020.

[4] **R. Campbell**, C. Finlay, and A. M. Oberman. Deterministic Gaussian averaged neural networks. *arXiv:2006.06061*, 2020.

Presentations

Nov. 2024	Various statistics seminars in France and Switzerland
	Title: A geometric approach to multivariate extremal inference
	Locations: Inria Grenoble, Université de Genève, École Polytechnique Fédérale de Lausanne, Université Claude Bernard Lyon 1, INRAE Avignon.
Sept. 2024	UQÀM Statistics Seminar
	Title: New developments for a geometric approach to multivariate extremal inference
	Location: UQÀM, Montréal, QC, Canada
Oct. 2023	HEC Statistics Seminar
	Title: Statistical inference for multivariate extremes via a geometric approach
	Location: HEC Montréal, Montréal, QC, Canada
Sept. 2023	STOR-i Extremes Workshop (STEW)
	Title: Modelling extremal dependence of a 3-dimensional oceanographic dataset via a semi-parametric geometric approach
	Location: Lancaster University, Lancaster, UK
June 2023	13th International Conference on Extreme Value Analysis
	Title: A geometric approach for modelling negative asymptotic dependence
	Location: Bocconi University, Milan, Italy

Teaching Assistantships

Lancaster University

Winter 2024	MATH333	Statistical Models (GLMs)
Winter 2024	MATH113	Convergence and Continuity
Winter 2023	MATH140	Statistics
Winter 2022	MATH456/556	Extreme Value Theory
Winter 2022	MATH235	Statistics II
Fall 2021	MATH330	Likelihood Inference

McGill University

Fall 2020	MATH208	Intro. to Statistical Computing
Fall 2019	MATH597	Topics in Applied Mathematics: Mathematics of Machine Learning
Fall 2019	MATH223	Linear Algebra

Research & Professional Activities

- **Data Science Intern**
  Desjardins General Insurance Group. Lévis, Québec.
  June–December 2020 (part-time), January–June 2021 (full-time)

Honours, Awards, and Funding

2023–2025	NSERC Postgraduate Scholarship-Doctoral	CA\$63,000
2023–2025	FRQNT Doctoral Research Scholarship	CA\$25,334
2021–2025	EPSRC Mathematical Sciences studentship	£62,436 (minimum)
2025	Institute of Mathematics Small Grant	£600
2025	Graduate College & Doctoral Academy Travel Grant (Lancaster University)	£200
2023	Nick Smith Prize (Lancaster University)	£500
2020	Mitacs internship at Desjardins	CA\$13,000
2019–2020	Master's degree funding	CA\$20,500
2019–2020	McGill University Graduate Excellence Award	CA\$3,400
2018	Science Undergraduate Research Award	CA\$6,500

Languages & Skills

- Fluent in English and French.

- Proficient in R, Python (incl. PyTorch), Matlab, LaTeX, Java, HTML, Linux

Extracurricular Activities

- **Treasurer**, Lancaster University Folk Society
  Lancaster University
  2023–2025 academic years.

- **VP Finance**, Graduate Student Association for Mathematics and Statistics (GSAMS)
  McGill University
  2019–2020 academic year.

- **Volunteer at the 2018 Statistical Society of Canada annual meeting**
  Roles: Setting up audio-visual equipment for presentations and directing conference

attendees to presentations.
Location: McGill University
3–6 June 2018