James **Benn**

Personal

James Benn
Nationality: New Zealand
YOB: 1987

About Me

I'm very interested in the analysis and geometry of continuum mechanics (in particular, the qualitative behaviour of PDE) and technical writing for science and engineering. I believe what's good for humans is good for AI and what's good for AI is good for humans: well produced and maintained technical documentation.

Soft skills

A curious and patient listener. Very strong written communication and presentation skills.
A diplomat who leads by giving people what they need to perform.
Surprisingly entertaining... at times.

Professional Interests

I'm a technical writer and research scientist working in mathematics, statistics and software for industry, and pure mathematics. I'm interested in statistics and mathematics for civil and software engineering, and producing and maintaining technical documentation of all kinds. My research interests lie in mathematical models of continuum mechanics and the geometry of diffeomorphism groups.

@ jbenn2@alumni.nd.edu

github.com/iksiri

+33 7 84 79 03 77

EXPERIENCE

2020-now	**Research Scientist** INRIA · France	
2019-2020	**Senior Claims Analyst** MINISTRY FOR PRIMARY INDUSTRIES · New Zealand	
2018	**Sabattical - Visiting Researcher** BU-ALI-SINA UNIVERSITY & GOETHE UNIVERSITY · Iran & Germany	
2018	**Construction & Maintenance Quality Control Analyst** HIGGINS CONSTRUCTION · New Zealand	
2016-2017	**Postdoctoral Researcher and Lecturer** MASSEY UNIVERSITY · New Zealand	
2015-2016	**Statistical Consultant** MID-CENTRAL DISTRICT HEALTH BOARD · New Zealand	

AREAS OF EXPERTISE

Technical Writing · Research
Statistical Process Controls · Performance Analysis
Classification · Time Series
Random Forests · Decision Trees
Shape & Image Analysis · Hydrodynamics
Diffeomorphism Groups · Analysis
Riemannian Geometry · Differential Geometry
ODEs · PDEs

PROGRAMMING

Python
R
SQL
LaTeX

EDUCATION

2010-2015	**PhD** MATHEMATICS · University of Notre Dame, USA	
2010-2012	**MSc** MATHEMATICS · University of Notre Dame, USA	
2009	**MS** APPLIED MATHEMATICS · Massey University, NZ	
2006-2009	**Bachelor Degree** INFORMATION SCIENCE · Massey University, NZ	

SELECTED PUBLICATIONS

2024	Knotted Solutions to the Euler Equations on the 3-Sphere
2023	Towards a BCH Formula on the Diffeomorphism Group with a Right-Invariant Metric
2022	A Setting for the Measurement and Analysis of Shape
2021	Conjugate Points on $\mathcal{D}_\mu\left(S^2\right)$

TEACHING

2021/2022	Introduction to Riemannian Geometry (Graduate Course).
2016	Mathematical Physics, Applied Linear Algebra, Differential Equations, Abstract Algebra, Mathematics for Engineering.
2011 - 2015	Discrete Mathematics, Calculus I-III, Linear Algebra & ODEs.