

# Benjamin Holland Young

PhD Researcher in Applied Probability & Stochastic Modelling, University of Bath

[benhollandyoung@gmail.com](mailto:benhollandyoung@gmail.com)

[linkedin.com/in/benhollandyoung](https://www.linkedin.com/in/benhollandyoung) | [github.com/benhollandyoung](https://github.com/benhollandyoung)

## Profile

---

First-year PhD researcher in mathematics (probability) at the University of Bath, with a focus on stochastic modelling and applied probability. Through collaborative projects with external partners in healthcare, biology, and sport, I have applied a range of probabilistic methods — including random graph models, hidden Markov models, and cellular automata to real, open-ended problems. I am comfortable taking a problem from formulation through to implementation in Python or R, analysis, and clear communication of results to non-specialist audiences.

## Education

---

### PhD in Probability, University of Bath

2025 – Present

- First-year researcher in the Statistical Applied Mathematics at Bath (SAMBa) Centre for Doctoral Training, supervised by Christoforos Panagiotis.
- Researching the near-critical behaviour of percolation, a class of stochastic models for connectivity in random media; the work involves deriving quantitative bounds and analysing the scaling behaviour of large random systems.
- First-year CDT training spanning advanced probability, statistics, numerical methods, mathematical modelling, and machine learning, alongside collaborative projects with external partners.

### MMath Mathematics, First Class Honours, University of Bath

2020 – 2025

- Integrated Master's in Mathematics, graduating with First Class Honours.
- Relevant coursework: Probability with Martingales, Discrete Probability, Stochastic Processes and Finance, and Markov Processes.

## Applied Modelling Projects

---

### Modelling Macular Degeneration

Macular Society

- Developed a cellular automaton model of disease progression in macular degeneration as part of a SAMBa Integrative Think Tank with the Macular Society, working in a multidisciplinary team.
- Co-author on a manuscript in preparation arising from the project.

### Cricket Performance Analysis

England & Wales Cricket Board

- Built hidden Markov models to characterise bowler strategy and player fatigue as part of a SAMBa Integrative Think Tank with the England and Wales Cricket Board (ECB).
- Contributed to problem formulation, model implementation, and a technical report and presentation of findings to the partner.

### Plasmid Similarity Networks

Dept. of Biology, Bath

- Modelled bacterial plasmid similarity networks using random graph models in place of hard similarity thresholds, in a cross-disciplinary collaboration with the Department of Biology & Biochemistry at Bath.
- Constructed distance-based covariates from genomic sequence representations and used them to investigate community structure within the networks.

## Technical Skills

---

- **Programming:** Python, R, SQL, C++.
- **Scientific computing & ML:** NumPy, Pandas, PyTorch, scikit-learn, Matplotlib, NetworkX.
- **Methods:** stochastic modelling, stochastic simulation, hidden Markov models, random graph models, cellular automata, statistical inference.

## Earlier Research Projects

---

### Spine Techniques for Branching Processes MMath Dissertation, 2024 – 25

- MMath dissertation investigating localised and non-localised behaviour in branching processes using spine methods, including simulation work in Python (supervised by Cécile Mailler).

### Abelian Sandpile Model & Conformal Invariance 2023

- Summer research project implementing the Abelian sandpile model in Python (**NetworkX**) to investigate conformal-invariance behaviour and the effect of Möbius transformations on toppling distributions (supervised by Antal A. Járai).

## Teaching & Communication

---

- Casual Teaching Assistant, University of Bath (2025–present): delivered tutorials and supported first-year undergraduates in probability and statistics; marked problem sheets and R-based coursework with written feedback.
- Helped organise a student-led session on data visualisation with data visualisation specialist Nicola Rennie.

## Additional Information

---

- Languages: English (native), French (C1), German (B1).