Brendan Case

Infectious disease modeling • Bayesian statistics • Experimental design

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Summary

PhD student in Computer Science combining mechanistic modeling and Bayesian statistics for the study of epidemiology and ecology. I am particularly interested in using these tools for informing how data should be collected and for assessing control options from a decision-theoretic perspective.

Education

2018– **Ph.D. Computer Science**, *University of Vermont*, Burlington, Vermont.
- Co-advisors: Laurent Hébert-Dufresne and Jean-Gabriel Young

2017–2019 **MRes. Natural Computation**, *University of Birmingham*, Birmingham, UK.
- Thesis: Self-adaptation in non-elitist evolutionary algorithms: a rigorous analysis on discrete problems with unknown structure
- Committee: Per Kristian Lehre (advisor), Thomas Jansen, Ata Kaban

2013–2017 **B.A. Mathematics**, *Oberlin College*, Oberlin, Ohio.
- Minor: Computer Science

Publications

Spatial epidemiology and adaptive targeted sampling to manage the Chagas disease vector Triatoma dimidiata
B. K. M. Case, Jean-Gabriel Young, Daniel Penados, Carlota Monroy, Laurent Hébert-Dufresne, Lori Stevens
ArXiv. 2021. arXiv:2111.05964

Flowers as dirty doorknobs: Deformed wing virus transmitted between Apis mellifera and Bombus impatiens through shared flowers
Phillip Alexander Burnham, Samantha Alger, Brendan Case, Humberto Boncristiani, Laurent Hébert-Dufresne, Alison Brody
Journal of Applied Ecology. 2021. doi:10.1111/1365-2664.13962

The unintended consequences of inconsistent pandemic control policies
Benjamin Althouse, Brendan Wallace, Brendan Case, Samuel Scarpino, Antoine Allard, Andrew Berdahl, Easton White, Laurent Hébert-Dufresne
MedRxiv. 2020. doi:10.1101/2020.08.21.20179473

Self-adaptation in nonelitist evolutionary algorithms on discrete problems with unknown structure
Brendan Case and Per Kristian Lehre
IEEE Transactions on Evolutionary Computation. 2020. doi:10.1109/TEVC.2020.2985450

Presentations

September 2019 **QuEST timeline: highlights from the first year**, *NSF National Research Traineeship annual meeting poster session*, Evanston, IL.

June 2019 **Hidden geometry of infestation in Chagas disease vectors: an approach from epidemiological network theory**, *Laboratorio de Entomología Aplicada y Parasitología Research Symposium*, Guatemala City, Guatemala.

May 2019 **Modeling disease spillover using multipartite networks**, *NetSci 2019*, Burlington, VT.

April 2019 **Modeling disease spillover in bees: exploring dilution effects**, *UVM Student Research Conference*, Burlington, VT.

Teaching

Teaching Assistant

Spring 2020 **Computability and Complexity**, *University of Vermont*.

Fall 2019 **Modeling Complex Systems**, *University of Vermont*.

Spring 2018 **Software Workshop I**, *University of Birmingham*.

Fall 2017 **Data Structures and Algorithms**, *University of Birmingham*.

Spring 2017 **Foundations of Analysis**, *Oberlin College*.

Spring 2017 **Algorithms**, *Oberlin College*.

Fall 2016 **Discrete Mathematics**, *Oberlin College*.

Workshops

8/16–8/23 2021 **QuEST Coding Workshop for Incoming Trainees**, *University of Vermont*.
Lecture notes

Professional Service and Leadership

February 2022 *Reviewer*, Physical Review E.

August 2021 *Reviewer*, Swarm and Evolutionary Computation.

Advanced Schools & Workshops

12/15–12/20 2019 **Complex Networks Winter Workshop**, *Université Laval*, Quebec City, Canada.

6/3–6/5 2019 **VectorBase Workshop**, *Universidad del Valle de Guatemala*, Guatemala City, Guatemala.

Awards

2019 **Graduate Teaching Assistantship Award**, *University of Vermont, department of Computer Science*.

2018 **QuEST National Research Traineeship**, *National Science Foundation & University of Vermont Graduate College*.

2017 **Postgraduate Teaching Assistantship Award**, *University of Birmingham, department of Computer Science*.

2013 **Conservatory Dean's Scholarship**, *Oberlin College*.

Skills & Expertise

Programming languages	R (tidyverse, tidygraph, sf/rgdal, caret), Julia (DifferentialEquations), Python
Statistical programming	Stan, R-INLA, nimble, Turing.jl
Visualization	ggplot2, ggraph, Inkscape

Community Service

2020-2022 Food Not Bombs, volunteer cook, *Burlington, VT*.

2018-2019 GoodGym, general member, *Birmingham, UK*.

2014-2015 Boys and Girls Club, tutor, *Oberlin, OH*.

Professional References

Lori Stevens	Professor, University of Vermont	*Lori.Stevens@uvm.edu* *(802) 656-0445*
Per Kristian Lehre	Senior Lecturer, University of Birmingham	*p.k.lehre@cs.bham.ac.uk* *+44 (0)121 414 8560*
Melissa Pespini	Associate Professor, University of Vermont	*Melissa.Pespeni@uvm.edu* *(802) 656-0628*