CHASE VAN AMBURG

Research Interests: population learning, open endedness, evolutionary/biological algorithms.

EDUCATION

HARVARD UNIVERSITY Aug 2023 – May 2024
M.S. in Applied Math
GPA: 4.0

HARVARD UNIVERSITY Aug 2020 – May 2024
B.A. in Integrative Biology | Minor in Computer Science, *magna cum laude*
GPA: 3.97

PUBLICATIONS AND PRODUCTS

PUBLICATIONS

Journal Publications

1. Automated detection of an insect-induced keystone vegetation phenotype using airborne LiDAR.
   ZY Wang, R Huben, PB Boucher, **C Van Amburg**, J Zeng, N Chung, J Wang, J King, RJ Knecht, I Ng'iru, A Baraza, DJ Martins, NE Pierce, AB Davies.
   Methods in Ecology and Evolution. 2024; 15: 978-993.

Conference Submissions, Presentations, and Posters

1. DIRT: The Distributed Intelligent Replicator Toolkit.
   CR Wang, **C Van Amburg**, HY Su, J Bejjani, Y Mazloumi, N Khoshnevis, SM Kakade, K Brantley, A Walsman.
   Poster at ALife2025.

2. Pandemic-Potential Viruses are a Blind Spot for Frontier Open-Source LLMs.
   L Luebbert, Y Ektefaie, AS Rao, C Wilkason, D Nosamiefan, O Achonduh-Atijegbe, H Soumare, AP Adebayo, O Olulaja, J Amadi, N Oyejide, F Olayiwola, E Henshaw, Y Okocha, N Nwachukwu, EF Ewah, S Okoro, E Nwakpakpa, P Okokhere, K Iraoyah, J Okoeguale, I Dada, A Burris, K Zhao, E Laning, **C Van Amburg**, P Cronan, B Fry, C Happi, A Ozonoff, P Sabeti.
   Oral Presentation at NeurIPS 2025 Workshop: GenAI4Health.

Under Review

1. The Emergence of Complex Behavior in Large-Scale Ecological Environments.
   J Bejjani, **C Van Amburg**, CR Wang, HY Su, SM Pratt, Y Mazloumi, N Khoshnevis, SM Kakade, K Brantley, A Walsman.

MEDIA FEATURES

1. "Sierra Leone is battling an mpox outbreak. What happens next affects us all."
   Journal article from *TIME Magazine*.
   https://time.com/7291478/sierra-leone-mpox-outbreak-pardis-sabeti-christian-happi-essay/.

2. "How physicians are preparing for climate change and extreme heat's impact on human health."
   Video from *PBS NewsHour*.
   https://www.pbs.org/newshour/show/research-shows-climate-change-already-putting-human-health-at-risk.

SOFTWARE

1. "Rowboat: a lightning fast tool for visualizing large datasets."
   A web-based software tool for viewing large tabular data.
   rowboat.net

2. "Lookout."
   A web-based pathogen surveillance dashboard.
   sl.sentinel.network/outbreak/

EXPERIENCE

MARCUS FELDMAN LAB, STANFORD UNIVERSITY Sep 2025 – Present
Cultural evolution, population genetics, dynamical systems Research Assistant

- Analyzed and developed population genetics-inspired models of cultural evolution.

KEMPNER INSTITUTE FOR NATURAL AND ARTIFICIAL INTELLIGENCE Mar 2025 – Present
Agent-based modeling, evolutionary computing, GPU simulation Researcher

- Developed experiments, visual analytics tools, and evolutionary theory for a large-scale RL-based evolutionary simulation of intelligence under the guidance of Dr. Aaron Walsman at Harvard.

FATHOM INFORMATION DESIGN Aug 2024 – Aug 2025
Data visualization, public health Developer, Designer

- Engineered pathogen surveillance systems for national public health agencies in the US, Nigeria, and Sierra Leone as part of the Broad Institute Sentinel effort, winning the MacArthur 100&Change grant for $100m.
- Developed interactive charts [JS, D3.js] and refined an Elixir-based backend for Rowboat, a spreadsheet visualizer built in C++ with a web assembly layer for in-browser use.

SATCHIT BALSARI LAB, HARVARD UNIVERSITY Mar 2023 – Jan 2024
Urban microclimate, public health Researcher

- Led a microclimate study with the largest women's union in the world (SEWA) to demonstrate climate inequity and drive policy change.
- Built the foundation for an ongoing study with thousands of participants, at the intersection of urban climates and public health, run by the Salata Climate Institute and Mittal South Asia Institute.

NAOMI PIERCE LAB, HARVARD UNIVERSITY Dec 2021 – Dec 2023
Behavioral ecology, remote sensing, computer vision Researcher

- Collected ecological data from 17,000+ trees in Kenya.
- Trained a computer vision classifier on LiDAR tree canopy data, leading to a publication.
- Modeled temperature variations across trees in the survey area with a coupled energy-balance model.

MICHAEL DESAI LAB, HARVARD UNIVERSITY May 2021 – Feb 2022
Experimental evolution Researcher

- Prepared strains for competitive fitness assays by conducting genetic transformations on non-model yeast species from a long-term evolution experiment.

TEACHING

2024–2025	Mentor, Curious Cardinals
Fall 2023	Teaching Fellow, AC243: Capstone in Machine Learning, Harvard University
Fall 2022	Head Teaching Fellow, MATH242: Evolutionary Dynamics, Harvard University
2021–2023	Course Assistant, LS50: Integrated Science, Harvard University
2020–2021	Tutor, Harvard Student Agencies Tutoring
2020	Mentor, Mentors United for Change

AWARDS + GRANTS

Awards: Phi Beta Kappa (2024), John Harvard Scholar (2022, 2023), Detur Book Prize (2022)
Grants: Mittal Institute (2023), Museum of Comparative Zoology (2022)

SPECIALTIES

Programming: Python, JavaScript, R, C++
General Interests: Evolutionary Dynamics, Theories of Intelligence, Animal Behavior, Music, Urban Development