

Álvaro Vega-Hidalgo

AI · HCI · ECOLOGY, EVOLUTION & BEHAVIOR

Ann Arbor, MI, USA

✉ alvarovh@umich.edu | 📱 alvarovegahd | 🌐 alvarovegahidalgo

Education

University of Michigan

PH.D. IN COMPUTER SCIENCE AND ENGINEERING

- Advisor: Dr. Rada Mihalcea (AI Lab – Language and Information Technologies).

Ann Arbor, USA

2024 – 2029 (expected)

National University of Costa Rica

B.S. IN TROPICAL BIOLOGY

Heredia, Costa Rica

2018

Work Experience

biometrio.earth

SENIOR SCIENTIST (REMOTE)

- Designed AI-driven data pipelines and software systems for ecosystem monitoring.
- Improved transparency for global carbon offset and biodiversity conservation initiatives.

Saarbrücken, Germany

Feb 2024 – Jun 2024

University of Michigan

COMPUTATIONAL BIOACOUSTICS RESEARCHER (REMOTE)

- Developed transfer-learning approaches for individual identification of capuchin vocalizations in focal and passive acoustic recordings.

Ann Arbor, USA

Aug 2023 – Present

Cornell Lab of Ornithology — Center for Avian Population Studies

DATA MANAGEMENT (HYBRID)

- Managed large soundscape datasets and HPC pipelines to evaluate sustainable coffee-farming impacts.
- Co-developed the *Biodiversity Progress Index* using Python, R, and AWS.

Ithaca, NY, USA

Dec 2019 – Present

Cornell Lab of Ornithology — K. Lisa Yang Center for Conservation Bioacoustics

SOFTWARE DEVELOPMENT & DATA ANALYSIS (HYBRID)

- Built *Euphonia*, a mobile app for community-based conservation (Unity3D & Firebase).
- Conducted bioacoustic analyses in restoration ecology (Osa Peninsula, Costa Rica).

Ithaca, NY, USA

Nov 2018 – Present

Smithsonian Tropical Research Institute; George Washington University

RESEARCH ASSISTANT

- Implemented DeepLabCut for automated behavioral tracking.
- Built GUIs and Raspberry Pi-based autonomous camera systems for field deployment.

Barro Colorado Island, Panama

Jun 2018 – Jun 2019

Dept. of Neurobiology and Behavior, Cornell University

VISITING RESEARCHER

- Led 3D modeling and ligand docking to study the evolution of Hawaiian cricket song and speciation.

Ithaca, NY, USA

Nov 2018 – Dec 2018

UC Davis & Smithsonian Tropical Research Institute

RESEARCH ASSISTANT

- Conducted primatology fieldwork, visual tracking, and big-data analysis of high-resolution GPS telemetry.

Barro Colorado Island, Panama

Dec 2017 – Oct 2018

University of Costa Rica — Technology Academy

INSTRUCTOR

- Taught statistics and programming workshops for faculty and students.

San José, Costa Rica

Oct 2018 – Nov 2018

MetricArts

INSTRUCTOR

- Designed and taught applied statistics & programming for business intelligence.

Panama City, Panama

May 2018 – Nov 2018

Organization for Tropical Studies

TEACHING ASSISTANT

- Assisted Ph.D. course: *Tropical Biology: An Ecological Approach*.

Costa Rica

May 2017 – Jul 2017

Brenesii

ENVIRONMENTAL EDUCATOR

- Taught environmental and social awareness to high-school students.

Costa Rica

May 2017 – Jun 2017

- DNA extraction, sequencing, and phylogenetic analyses of velvet worms.

Publications & Media

- Vega-Hidalgo, Á.**, Abzaliev, A., Bergman, T., & Mihalcea, R. (2025, July). Acoustic Individual Identification of White-Faced Capuchin Monkeys Using Joint Multi-Species Embeddings. *Proceedings of the 63rd Annual Meeting of the Association for Computational Linguistics (Volume 2: Short Papers)*, 645–659.
- Molina-Mora, I., Ruíz-Gutiérrez, V., **Vega-Hidalgo, Á.**, & Sandoval, L. (2024). The utility of passive acoustic monitoring for using birds as indicators of sustainable agricultural management practices. *Frontiers in Bird Science*, 3, 1386759.
- Vega-Hidalgo, Á.**, Kahl, S., Symes, L., Ruiz-Gutiérrez, V., et al. (2023). A collection of fully-annotated soundscape recordings from neotropical coffee farms. *Zenodo Dataset*.
- Vega-Hidalgo, Á.** et al. (2021). Acoustic assessment of experimental reforestation in a Costa Rican rainforest. *Ecological Indicators*, 133, 108413.
- Vega-Hidalgo, Á.** et al. (2020). Decline of native bees in a tropical forest of Panama. *Apidologie*.
- Krichilsky, E., **Vega-Hidalgo, Á.** et al. (2020). First gynandromorph of *Megalopta amoena*. *Journal of Hymenoptera Research*, 75, 97.
- González, J. P. B., **Vega-Hidalgo, Á.**, Monge-Nájera, J. (2019). Feeding behavior of Costa Rican velvet worms. *UNED Research Journal*, 11(2), 85–88.
- Media:** Featured in *World Economic Forum*, *Smithsonian Magazine*, and *La Nación (Costa Rica)*.

Technical Reports

Nespresso AAA Sustainable Quality Program

THE BIODIVERSITY PROGRESS INDEX

2022

- Tool for measuring and communicating the impact of regenerative practices on biodiversity.

Computer Science Skills

Research	NLP, Computational bioacoustics, HCI
Tools	AWS SageMaker, Google Cloud, HPC, signal processing, ML/DL, bioacoustics, bioinformatics, Unity3D, GIS, Unix
Python	Pandas, NumPy, Matplotlib, Librosa PyTorch, TensorFlow, Keras
R	tidyverse, sf, seewave, shiny
C#	Unity3D for scientific visualization and app development
App Dev	Firebase, Dart/Flutter, JavaScript

Languages

English	Fluent
Spanish	Native

Awards & Research Funds

2021	AI for Natural Environments (co-lead), \$100k , Microsoft + National Geographic	International
2019	Quantifying Bee Behavior with AI, \$4k , George Washington University	USA
2018	1st Place, Hardwarethon , IoT Innovation — Costa Rica	Costa Rica
2018	Vector Prize , Linux Foundation — Heredia R User Group	Costa Rica
2017	2nd Place, SynBioThon , Synthetic Biology	Costa Rica
2015	Full Honor Scholarship , University of Costa Rica	Costa Rica
2013	Bronze Medal , Ibero-American Biology Olympiad	Argentina
2012	Best Experimental Exam , National Chemistry Olympiad	Costa Rica

Presentations (Selected)

2nd International Symposium on Computational Intelligence Applied to Animal Behavior Analysis

Puebla, México

PLENARY TALK

Aug 2025

“Cross-Species AI Models for Decoding Animal Communication.”

Harvard University — Bridging brains and bioacoustics seminar

INVITED TALK

"AI and Animal Communication in dogs and capuchin monkeys."

Cambridge, USA

Sep 2025

BirdNET+ Workshop

INVITED TALK

"Open Source Computational Bioacoustics for Community-Based Conservation."

Chemnitz, Germany

2024

UMichigan — Evolution & Human Adaptation Seminar

INVITED TALK

"Acoustic identification of white-faced capuchins using deep learning."

Ann Arbor, USA

2023

Animal Behavior Society

INVITED TALK

"Mobile Audio Annotation Tool in Agroforestry Landscapes."

San José, Costa Rica

2022

Cornell Day of Data

PANEL DISCUSSION

"Challenges for Bioacoustics Training Data."

Ithaca, New York

2021

The Association for the Study of Animal Behaviour (ASAB)

POSTER PRESENTATION

"Behavioral tracking gets real in the wild".

Konstanz, Germany

2019

National Center for High Technology

INVITED TALK

"Bioinformatics applied to animal behavior and movement ecology".

San José, Costa Rica

2018

STRI — Capybara Seminar

INVITED TALK

"Revisiting multiple central place foraging in spider monkeys".

Barro Colorado Island, Panamá

2018

XI Latin American Congress of Herpetology

POSTER PRESENTATION

"Personality of *Oophaga pumilio*".

Quito, Ecuador

2017

Advanced Materials & Nanotechnology

SYMPOSIUM

"Topography and electronic characterization by STM of thin film semiconductors for applications in photovoltaic solar cells".

San José, Costa Rica

2017

Volunteer Work

SIFAIS

GUITAR INSTRUCTOR FOR CHILDREN IN SOCIAL RISK

Costa Rica

2016 (10 months)