

# Vanessa Cedeno-Mieles, Ph.D.

Research Scientist | Applied Machine Learning, Simulation & Large-Scale Systems  
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## EDUCATION

### VIRGINIA TECH

PH.D. IN COMPUTER SCIENCE

2014-2019 | Blacksburg, VA

### FLORIDA STATE UNIVERSITY

MASTER OF SCIENCE, COMPUTER  
SCIENCE

2008-2010 | Tallahassee, FL

### ESPOL / ESCUELA SUPERIOR POLITECNICA DEL LITORAL

BACHELOR OF COMPUTER SCIENCE

2002-2007 | Guayaquil, Ecuador

## LINKS

LinkedIn:// vanessa-cedeno-mieles

Github:// vcedeno

## TECHNICAL EXPERTISE

### PROGRAMMING

Python (advanced) • R • Java • C++

### ML & MODELING

Agent-based and stochastic simulation

- Statistical & ML models
- Data-driven behavioral modeling
- Generative & hybrid models

### SYSTEMS & DATA

- Large-scale simulation

- Data pipelines • ETL • Model validation

- HPC workflows

### DATABASES

SQL • PostgreSQL • MySQL

## AWARDS

- 2024 - ESPOL Best Researcher in the Communication Media Studies subarea.
- 2023 - ESPOL Best Researcher in the Communication Media Studies subarea.
- 2010-2011 - Teaching Merit Diploma: Awarded by ESPOL, School of Electrical Engineering and Computer Science.
- 2008 - 2010 - FULBRIGHT Scholarship: Scholarship for Master in the USA.

## LANGUAGES

- English, Spanish (Fluent)
- French (Medium level)

**RESEARCH INTERESTS:** Machine learning, large-scale simulation, agent-based and networked systems, data-driven behavioral modeling, experimental design, and applied AI for complex socio-technical and industrial systems.

## RESEARCH

### UNIVERSITY OF VIRGINIA | POSTDOCTORAL RESEARCH ASSOCIATE

August 2024 – Present | Charlottesville, VA

- Owned and initiated a research agenda on large-scale agent-based and networked simulations to evaluate carbon reduction interventions in U.S. cement manufacturing.
- Designed and implemented a **Python-based experimentation framework** supporting large-scale simulation runs, iterative hypothesis testing, and metric-driven evaluation.
- Integrated **machine learning and large language models with empirical and qualitative data** to parameterize, validate, and stress-test simulation models.

### ESPOL | RESEARCH PROFESSOR / ASSOCIATE SUB-DEAN

Jun 2019 - July 2024 | Guayaquil, Ecuador

- Led applied research on **data-driven modeling and simulation of networked social systems**, combining empirical data analysis, simulation, and experimentation.
- Built **Python-based data pipelines** for longitudinal behavioral datasets from distributed systems (FamilySong), enabling scalable and reusable analysis for ICT/HCI research.
- Served as Associate Sub-Dean overseeing large academic programs (2,000+ students, 120+ faculty), managing complex, multi-stakeholder initiatives and continuous improvement processes.

### NETWORK DYNAMIC AND SIMULATION SCIENCE LABORATORY

#### | GRADUATE RESEARCH ASSISTANT

January 2015 – May 2019 | Blacksburg, VA

- Independently owned **end-to-end research problems** from formulation through experimental design, large-scale simulation, evaluation, and publication.
- Developed **scalable, reusable Python research infrastructure** for simulation and data analysis.
- Designed **hybrid experiments** combining simulation, data mining, and generative modeling to explain emergent social dynamics.

## SELECTED PUBLICATIONS

- **Cedeno-Mieles, V., & Shafiee-Jood, Majid.** “A Framework for Modeling and Simulation of Multi-dimensional Coupled Socio-Environmental Networked Experiments.” Winter Simulation Conference (WSC) 2025.
- **Cedeno-Mieles, V. et al.** “Data analysis and modeling pipelines for controlled networked social science experiments.” PLOS ONE, 2020.
- **Cedeno-Mieles, V. et al.** “Mechanistic and Data-Driven Agent-Based Models to Explain Human Behavior in Web-Based Group Anagram Game”. ASONAM, 2019. ([Full list available at vcedeno.github.io](#))

## EXPERIENCE

### ESPOL | ASSISTANT PROFESSOR

May 2010 – Jul 2014 | Guayaquil, Ecuador

- Led a multi-phase accreditation initiative resulting in the **first ABET-accredited Computer Science program in Ecuador**, coordinating cross-functional teams, formal evaluation frameworks, documentation pipelines, and external audits.