

Ollin D. Langle-Chimal

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IDENTIFICATION NUMBERS

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PRIMARY RESEARCH INTERESTS

Computational Social Science, Disease Surveillance, Development Economics, Augmented Democracy, Mobility Patterns, Urban Systems, Economics, Statistical Physics, Complex Systems Theory, Machine Learning, NLP, Network Science, Human Behavior, Sustainability.

EDUCATION

University of Vermont (UVM)

Burlington, VT, USA

PhD, Complex Systems and Data Science

Aug. 2018 – July 2023

- Advisor: Nicholas Cheney
- Gund Institute Graduate Fellow
- Thesis: Data Science and Mathematical Modeling for Humanitarian Response

Instituto Tecnológico Autónomo de México (ITAM)

Mexico City, Mexico

MSc, Data Science

Aug. 2016 – May 2018

- Advisor: Carlos Fernando Esponda Darlington
- Thesis: Non-backtracking spectral algorithm for community detection on weighted networks.

Universidad Nacional Autónoma de México (UNAM)

Mexico City, Mexico

BSc, Physics

Aug. 2006 – May 2016

- Advisor: Jesús Espinal Enriquez
- Thesis: Optimal percolation on complex networks.

PROFESSIONAL EXPERIENCE

Postdoctoral Researcher

June 2024 – Present

University of California

Berkeley, CA, USA

- Research on mobility trends by employment status in Low and Medium income countries.
- Research on employment choice as a Random Utility Model based on commuting patterns.
- Research on economic complexity at the sub-city level using urban flows.
- Fine-grain estimation of the informal labor force using surveys and census.

Data Scientist

September 2022 – September 2024

THINKMD

Burlington, VT, USA

- Development of disease and symptoms surveillance tools.
- Development of machine learning based clinical logic for disease assessments.
- Inference and anomaly detection using electronic health records in low and middle income countries.
- Data engineering and quality control.

Data Scientist - STC

December 2020 – August 2023

The World Bank

Washington, D.C., USA

- Geospatial analysis and dashboard design of GPS data and expenditure to understand gaps in mobility reduction and economical activity patterns in different socioeconomic groups.

Graduate Research Assistant

August 2018 – August 2022

University of Vermont, Neurobotics Lab

Burlington, VT, USA

- Gamification for decision making analysis.

- Analysis and modeling of human behavior under events of distress (natural hazards and epidemics).
- Text classification for expressed needs during the Ebola outbreak in Sierra Leone.
- Analysis of the Prueba PLANEA for understanding achievement gaps in Mexico.
- Analysis of temporal correlations in human migration patterns.

Senior Data Scientist

August 2017 – August 2018

Ministry of Social Development (SEDESOL) and Inter-American Development Bank

Mexico City, Mexico

- Income estimation.
- Automated analysis and detection of misreporting in surveys.
- Development of a tool for detection of irregularities in social programs.
- Build a unified PostgreSQL database for all the social programs under SEDESOL.
- Build R package to access the database.

Senior Data Scientist

August 2017 – August 2018

Presage Research

Mexico City, Mexico

- Build a reputation management tool for social media.
- Deep learning for oil leak detection.

Summer Research Internship

June 2017 – August 2017

Stevens Institute of Technology

Hoboken, New Jersey, USA

- Social media mining.
- Build a geospatial data base.
- Analysis of urban perception.
- Analysis of the correlation between caloric intake and social media usage.

Data Scientist

March 2017 – May 2017

Institute of Analytics

Mexico City, Mexico

- Community detection in social networks.
- Topic modeling of the Mexican entrepreneur network in social media.
- Complex network visualization.

Visiting Student Researcher

November 2015 – June 2017

National Institute of Genomic Medicine (INMEGEN)

Mexico City, Mexico

- Optimal percolation and community detection in genomic networks.

Undergraduate Research Assistant

August 2012 – May 2013

Nuclear Sciences Institute, UNAM

Mexico City, Mexico

- Research on UHECR production methods by extragalactic sources.
- Research on the origin of cosmic rays via hadronic and leptonic models.

Teaching Assistant

August 2012 – December 2017

School of Science, UNAM

Mexico City, Mexico

- Analytical Geometry I
- Analytical Geometry II
- Computational Modeling of Complex Systems and Non-linear Dynamics
- Complex Networks
- Introduction to Programming

HONORS AND AWARDS

Best Poster Award	2024
<i>NetMob Conference - The disparate impact of COVID-19 on mobility patterns in developing countries</i>	
GCP credits award	2020 and 2023
<i>Google</i>	
<ul style="list-style-type: none">• Awarded with \$4000 USD worth in GCP credits for research on human mobility 2023• Awarded with \$1000 USD worth in GCP credits for research and automated population health monitoring in low income countries 2023• Awarded with \$800 USD worth in GCP credits for NLP research on COVID-19 2020	
Best Chapter Award	2022
<i>Society for the Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS)</i>	
Angela Batista Award	2021
For students of color who have demonstrated a commitment to social justice and change through anti-racist work, UVM	
Graduated with Honors	2018
<i>MSc, Data Science, ITAM</i>	
Ex-ITAM Research Prize	2018
<i>Best Research Thesis, ITAM</i>	
NumFOCUS Travel Grant	2018
<i>Financial aid for academic travel in Summer 2018</i>	
CONICET Travel and Tuition Grant	2016
<i>Financial aid for academic travel and tuition in Winter 2016</i>	

SELECTED RESEARCH ARTICLES

- Lucchini, Lorenzo, **Ollin D. Langle-Chimal**, Lorenzo Candeago, Lucio Melito, Alex Chunet, Aleister Montfort, Bruno Lepri, Nancy Lozano-Gracia, and Samuel P. Fraiberger. "Socioeconomic disparities in mobility behavior during the COVID-19 pandemic in developing countries." *EPJ Data Science* 14, no. 1 (2025): 25.
- **Ollin D. Langle-Chimal**, Samuel Scarpino, Megan McLaughlin, Ezra Mount-Finette, Lynn Metz, Nirmal Ravi, Aisha Giwa, Nada Haidar, Fatima Adamus, Adam Thomson, Shawna Cooper, Sam Smedinghoff, and Barry Finette. "Improving Real-Time Malaria Diagnosis on Site: Transforming Malaria Detection with Machine Learning", In review.
- **Ollin D. Langle-Chimal**, Eric M. Clark, Scott C. Merrill, Gabriela Bucini, Trisha Shrum, Christopher Koliba, Asim Zia, Julia M. Smith, and Nicholas Cheney. "Temporal Evolution of Risk Behavior in a Disease Spread Simulation.", In review.
- Silvia de Sojo, Lorenzo Lucchini, **Ollin D. Langle-Chimal**, Samuel P. Fraiberger, and Laura Alessandretti. "Establishing validated standards for Home and Work location Detection in GPS data" In review.
- **Ollin D. Langle-Chimal**, Steffen Knoblauch, and Marta C. Gonzalez. "Modeling Urban Job Location Choices through Economic Complexity, Informality, and Mobility Data", In prep.
- **Ollin D. Langle-Chimal**, and Marta C. Gonzalez. "The Complexity of Commuting: Developing an Economic Complexity Index from Urban Labor Mobility", In prep.
- **Ollin D. Langle-Chimal**, Bernardo García-Bullé, Samuel Fraiberger, Alex Pentland, and Esteban Moro. "The recovery paradox: unequal socio-economic impact and recovery of COVID-19 in Mexico.", In prep.
- Laura A. Skrip, Jamie Bedson, Sharon Abramowitz, Mohammed B. Jalloh, Saiku Bah, Mohamed F. Jalloh, **Ollin D. Langle-Chimal**, Nicholas Cheney, Laurent Hébert-Dufresne, and Benjamin M. Althouse. "Unmet needs and behaviour during the Ebola response in Sierra Leone: a retrospective, mixed-methods analysis of community feedback from the social mobilization action Consortium." *The Lancet Planetary Health* 4, no. 2 (2020): e74-e85.
- Eric M. Clark, Scott C. Merrill, Luke Trinity, Gabriela Bucini, Nicholas Cheney, **Ollin D. Langle-Chimal**, Trisha Shrum, Christopher Koliba, Asim Zia, and Julia M. Smith. "Using experimental gaming simulations to elicit risk mitigation behavioral strategies for agricultural disease management." *PloS one* 15, no. 3 (2020): e0228983.

- Eric M. Clark, Scott C. Merrill, Luke Trinity, Gabriela Bucini, Nicholas Cheney, **Ollin D. Langle-Chimal**, Trisha Shrum, Christopher Koliba, Asim Zia, and Julia M. Smith. "Emulating Agricultural Disease Management: Comparing Risk Preferences Between Industry Professionals and Online Participants Using Experimental Gaming Simulations and Paired Lottery Choice Surveys." *Frontiers in veterinary science* 7 (2020).
- Eric M. Clark, Scott C. Merrill, Luke Trinity, Gabriela Bucini, Nicholas Cheney, **Ollin D. Langle-Chimal**, Trisha Shrum, Christopher Koliba, and Asim Zia. "Comparing behavioral risk assessment strategies for quantifying biosecurity compliance to mitigate animal disease spread." *Frontiers in Veterinary Science* 9 (2022): 962989.
- Tung-Lin Liu, Scott C. Merrill, Aislinn O'Keefe, Eric M. Clark, **Ollin D. Langle-Chimal**, Luke Trinity, Trisha R. Shrum, Christopher Koliba, Asim Zia, Timothy L. Sellnow, Deanna D. Sellnow, and Julia M. Smith. "Effects of message delivery on cross-cultural biosecurity compliance: insights from experimental simulations." *Frontiers in Veterinary Science* 9 (2022): 984945.
- Gabriela Bucini, Eric M. Clark, Scott C. Merrill, **Ollin D. Langle-Chimal**, Asim Zia, Christopher Koliba, Nicholas Cheney, Serge Wiltshire, Luke Trinity, and Julia M. Smith. "Connecting livestock disease dynamics to human learning and biosecurity decisions." *Frontiers in Veterinary Science* 9 (2023): 1067364.
- Scott C. Merrill, Gabriela Bucini, Eric M. Clark, Christopher J. Koliba, Luke Trinity, Asim Zia, **Ollin D. Langle-Chimal**, Nicholas Cheney, Trisha Shrum, Timothy L. Sellnow, Deanna D. Sellnow, Julia L. Smith. "Why we need to account for human behavior and decision-making to effectively model the non-linear dynamics of livestock disease." (2021).

INVITED ACADEMIC PRESENTATIONS

PUEDJS-UNAM Colloquium on Computational Social Science	Mexico City, Mexico
<i>Modeling Human Mobility</i>	2024
Latin American Conference on Complex Networks	Cartagena, Colombia
<i>Temporal Analysis of the Asylum Seekers Network (Comp Mass Migrations Satellite)</i>	2019
Latin American Conference on Complex Networks	Cartagena, Colombia
<i>Automated Anomaly Detection (Corruption Nets Satellite)</i>	2019
UseR	Mexico City, Mexico
<i>Julia and R Integration - The JuliaCall and RCall packages</i>	2018

CONTRIBUTED ACADEMIC PRESENTATIONS

NetMob	Washington, D.C.
<i>Mobility and Vulnerability: The Role of Informal Employment</i>	2024
International Conference on Computational Social Science	Chicago, Illinois
<i>The disparate impact of COVID-19 on mobility patterns in developing countries</i>	2022
Complex Networks and their Applications	Madrid, Spain
<i>The effects of personal beliefs in a disease spreading process</i>	2021
Conference on Complex Systems	Remote (Athens, Greece)
<i>Educational gaps in Mexico: a causal inference approach (CS4MV satellite)</i>	2020
NetSci	Remote (Rome, Italy)
<i>Voluntary mobility and distancing measures decrease the spread of SARS-CoV2 in Mexico City</i>	2020
Latin American Conference on Complex Networks	Cartagena, Colombia
<i>19S - Mexico's Resilience in an Earthquake Event</i>	2019
NetSci	Burlington, Vermont
<i>19S - Mexico's Resilience in an Earthquake Event (NS4SG satellite)</i>	2019
JuliaCon	London, UK
<i>Julia for Complex Network Analysis of Political Data</i>	2018
Conference on Complex Systems	Cancun, Mexico
<i>Dynamics of the Mexican Senate (Comp. Soc. Sc. satellite)</i>	2017
Conference on Complex Systems	Cancun, Mexico
<i>NER for inferring a Drug-Cartel Network (Comp. Soc. Sc. satellite)</i>	2017

POSTER PRESENTATIONS

NetMob <i>The disparate impact of COVID-19 on mobility patterns in developing countries</i>	Washington, D.C. 2024
Global Digital Health Forum <i>Development of a ML approach to assess Malaria with clinical data</i>	Washington, D.C. 2023
American Society of Tropical Medicine and Hygiene <i>Development of a ML approach to assess Malaria with clinical data</i>	Chicago, Illinois 2023
International Conference on Computational Social Science <i>The effects of personal beliefs in a disease spreading process</i>	Chicago, Illinois 2022
Latin American Conference on Complex Networks <i>Gamification for Decision Making Analysis</i>	Cartagena, Colombia 2019
Conference on Complex Systems <i>Optimal Percolation of a Drug-Cartel Network</i>	Cancun, Mexico 2017
Latin American Conference on Complex Networks <i>Optimal Percolation of a Drug-Cartel Network</i>	Puebla, Mexico 2017
Latin American Conference on Complex Networks <i>Dynamics of the Mexican Senate</i>	Puebla, Mexico 2017

SCHOOLS AND WORKSHOPS

Net-COVID, Network Epidemiology in the time of Coronavirus <i>COMBINE, University of Maryland</i> <ul style="list-style-type: none">• Project: Effect of voluntary distancing measures on the spread of SARS-CoV2 in Mexico City.• Honorable Mention	Remote 2020
Complex Networks Winter Workshop <i>University of Vermont and Laval University</i> <ul style="list-style-type: none">• Project: Corruption Networks.	Quebec City, Canada 2018
SoFiA: School on Data Analysis and Math. modeling of Social Sciences <i>Universidad de Buenos Aires</i>	Buenos Aires, Argentina 2016
Summer School on Modeling for Sustainability <i>Universidad Nacional Autónoma de México</i>	Mexico City, Mexico 2016
First-Passage Processes and Biological Implications <i>Universidad Autónoma de la Ciudad de México</i>	Mexico City, Mexico 2015
Demography Colloquium <i>Colegio de México</i>	Mexico City, Mexico 2013

SOFTWARE

PolaRoam <i>Principal developer</i> <ul style="list-style-type: none">• Open framework for incremental human mobility analysis. (Python) [code]	2024
wbgps <i>Principal developer</i> <ul style="list-style-type: none">• Distributed framework for human mobility analysis. World Bank. (Python) [code]	2021
NetABM.jl <i>Principal developer</i> <ul style="list-style-type: none">• Network Agent Based Modeling framework for epidemiological and opinion dynamics. (Julia) [code]	2020
Node2Vec.jl <i>Principal developer</i> <ul style="list-style-type: none">• Contextual node embedding for complex networks. (Julia) [code]	2019
ComplexSystems.jl <i>Principal developer</i>	2018

- Framework for modeling complex systems. (Julia) [\[code\]](#)

dbrsocial

2018

Principal developer

- Library for querying a social programs database. Commissioned by SEDESOL. (R)

JOURNAL REFEREE

- PLoS one
- PLoS Biology
- Scientific Reports
- International Journal of Disaster Risk Reduction
- Ecology and Society

COMMITTEES AND SERVICE

- Founding member, and social media manager of the UVM's chapter of the Society for Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS).
- Mechanism Design for Social Good (MD4SG) - Latin America and the Caribbean Working Group
- "Verano Internacional de la Ciencia 2024" - Program: Mentoring a female indigenous researcher for a presentation at the ACM EAAMO conference.

SKILLS AND ADVOCACY

Languages: Spanish (native), English (proficient), French (beginner)

Computational Languages: Julia, Python, R, JavaScript, SQL, GraphQL, Cypher, Bash, LaTeX.

Frameworks: Jekyll, Hugo, D3, P5, React.

Developer Tools: Git, Docker, TravisCI, GCP, AWS, Spark, Neo4J, NeoVim.

Advocacy: Open science, open source, open data, equity, inclusion.