

# Ollin D. Langle-Chimal

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## IDENTIFICATION NUMBERS

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Scopus ID: 57215087900

## PRIMARY RESEARCH INTERESTS

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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

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### 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

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### 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

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

## SELECTED RESEARCH ARTICLES

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- 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

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

#### CONTRIBUTED ACADEMIC PRESENTATIONS

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

## POSTER PRESENTATIONS

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

## SCHOOLS AND WORKSHOPS

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

## SOFTWARE

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

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

## COMMITTEES AND SERVICE

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- 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

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**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.