

# Luis G. Polanco Contreras

<https://lucho8908.github.io/luispolanco/>  
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## EDUCATION

### MICHIGAN STATE UNIVERSITY

PHD IN COMPUTATIONAL

MATHEMATICS, SCIENCE AND  
ENGINEERING

Aug 2016 - May 2022 (Expected)

East Lansing, MI

Computational Mathematics, Science and  
Engineering

### UNIVERSIDAD DE LOS ANDES

MS IN MATHEMATICS

Aug 2014- May 2016

Bogota, Colombia

Department of Mathematics

BS IN MATHEMATICS

Jan 2007 - Dec 2013

Bogota, Colombia

Department of Mathematics

## LINKS

Github:// [lucho8908](https://lucho8908)

LinkedIn:// [luis-polanco](https://luis-polanco)

## SKILLS

### PROGRAMMING

Over 3000 lines:

Python • Matlab • R •  $\text{\LaTeX}$

Over 1000 lines:

C++ • Mathematica

### LANGUAGES

English • Spanish (native)

## EXPERIENCE

### MICHIGAN STATE UNIVERSITY | RESEARCH ASSISTANT

Spring 2022, Spring 2020, Spring 2019, 2018, 2017, Fall 2016 | East Lansing, MI

- My research focus on developing and analyzing method in topological data analysis to bring tools from algebraic topology and geometry into the world of data science and machine learning. I have a solid background in algebraic topology, differential geometry, machine learning, probability and statistics.

### MICHIGAN STATE UNIVERSITY | GRADUATE TEACHING ASSISTANT

2021, Fall 2020, Fall 2019, Fall 2018 | East Lansing, MI

- I assisted in developing and applying instructional material for undergraduate the classes: Introduction to Data Science, Introduction to Computational Modeling. As well as developed material for the graduate courses: Foundations in Computational Science and Engineering, Mathematical Foundations of Data Science and Topological Methods for the Analysis of Data.

### PROCTER & GAMBLE | MARKETING INTERN

Spring 2011 | Bogotá, Colombia

- I worked as a marketing intern in Procter Gamble Colombia for the brand under the House care and Fabric care branches. I was in charge of administrative duties on top of arranging and attending client meeting to deploy and develop future marketing strategies for our brands.

## PUBLICATIONS

### A COMPARATIVE STUDY OF MACHINE LEARNING METHODS FOR PERSISTENCE DIAGRAMS

with D. Barnes and J. A. Perea

Frontiers Artificial Intelligence 4 | 2021

### ADAPTIVE TEMPLATE SYSTEMS: DATA-DRIVEN FEATURE SELECTION FOR LEARNING WITH PERSISTENCE DIAGRAMS

with J. A. Perea

18-th IEEE International Conference On Machine Learning And Applications | 2019 | Pages 1115 - 1121

### COORDINATIZING DATA WITH LENS SPACES AND PERSISTENT COHOMOLOGY

with J. A. Perea

Proceedings of the 31-st Canadian Conference on Computational Geometry | 2019 | Pages 49-58

### MÉTODO MONTECARLO EN ESTIMACIÓN DE PARÁMETROS.

with A. Noratto

Cap&Cua ISSN-e2145-5643 Vol. 8 Num. 1 | 2012 | Pages 1-12

### RETOS INHERENTES A LOS PROTOCOLOS AMBIENTALES LUEGO DE 2012: UNA NUEVA COYUNTURA POLITICO-AMBIENTAL.

Cap&Cua ISSN-e2145-5643 Vol. 5 Num. 1 | 2011 | Pages 14-17

### LÓGICA MODAL HÍBRIDA: NOCIONES BÁSICAS.

Cap&Cua, ISSN-e2145-5643 Vol. 3 Num. 1 | 2010 | Pages 9-13

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## TALKS

### DATA DRIVEN TORSION COORDINATES AND WASSERSTEIN STABILITY

with J. A. Perea

Algebraic Topology: Methods, Computation, and Science (Virtual) | August, 2021

### COORDINATIZING DATA WITH LENS SPACES AND PERSISTENT COHOMOLOGY

with J. A. Perea

Join Mathematics Meetings | January, 2020

### COORDINATIZING DATA WITH LENS SPACES AND PERSISTENT COHOMOLOGY

with J. A. Perea

1-st Midwest Student Conference: Geometry and Topology meet Data Analysis and Machine Learning | May, 2021

### ADAPTIVE TEMPLATE SYSTEM: DATA-DRIVEN FEATURE SELECTION FOR LEARNING WITH PERSISTENCE DIAGRAMS

with J. A. Perea

18-th IEEE International Conference on Machine Learning and Applications | December, 2021

## AWARDS

### TRAVEL FELLOWSHIP

by American Mathematics Society | February 2019

### TRAVEL FELLOWSHIP

by Department of Computational Mathematics, Science and Engineering - Michigan State University | February 2018

### FULL-TUITION FELLOWSHIP FOR MASTER'S DEGREE

by Universidad de los Andes | 2014 -2016

### FELLOWSHIP "PROGRAMA PREST&GIO" (PRESTIGE PROGRAM)

by Procter & Gamble | December 2010

### YERLY FELLOWSHIP

by Universidad de los Andes | Decemember 2008