

# Daniel Gonzalez Cedre

MATHEMATICIAN · COMPUTER SCIENTIST

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## Education

### University of Notre Dame

PH.D. IN COMPUTER SCIENCE

*Jun. 2019 – Present*

*Notre Dame, IN, USA*

- Working on temporal graph mining and rule-based graph transformations with interests in applied category theory
- Recipient of the Deans' Graduate Fellowship
- Graduate Student Recruitment Representative
- Advised by Tim Weninger

### Florida State University

M.SC. IN MATHEMATICS

*Aug. 2017 – May 2019*

*Tallahassee, FL, USA*

- Concentration in Financial Mathematics
- Recipient of the Dean's Graduate Scholarship

### Florida International University

B.SC. IN MATHEMATICS · CUM LAUDE

*Aug. 2012 – May 2016*

*Miami, FL, USA*

B.SC. IN COMPUTER SCIENCE · CUM LAUDE

- McNair Scholar, 12<sup>th</sup> cohort
- Recipient of the National Hispanic Scholarship
- Recipient of the Florida Bright Futures Academic Scholarship

### Miami-Dade College

A.A. IN MATHEMATICS · MAGNA CUM LAUDE

*Jun. 2010 – Apr. 2012*

*Miami, FL, USA*

- Dual Enrollment through the School for Advanced Studies at Wolfson
- AP Scholar with Distinction
- National Hispanic Scholar

## Internships & Projects

### Intern Research Scientist

LAWRENCE LIVERMORE NATIONAL LAB.

*May 2022 – Aug. 2022*

*Livermore, CA, USA*

- Developed a dynamic vertex-replacement graph grammar based on CNRG
- Advised by Grant Boquet and Timothy La Fond

### Intern Research Scientist

LAWRENCE LIVERMORE NATIONAL LAB.

*Jun. 2021 – Aug. 2021*

*Livermore, CA, USA*

- Worked to find optimal dendrogram decompositions for vertex-replacement graph grammars
- Advised by Grant Boquet and Timothy La Fond

### Intern Research Scientist

LAWRENCE LIVERMORE NATIONAL LAB.

*Nov. 2020 – Feb. 2021*

*Livermore, CA, USA*

- Modeled temporal graphs with hidden Markov models
- Modified a vertex-replacement graph grammar to incorporate hidden Markov states
- Evaluated the quality of generated temporal graphs using standard graph comparison metrics
- Advised by Grant Boquet and Timothy La Fond

### Contactless Fingerprint Collection

COMPUTER VISION RESEARCH LAB. AT NOTRE DAME

*Jun. 2019 – Jan. 2020*

*Notre Dame, IN, USA*

- Sponsored by West Virginia University
- Advised by Adam Czajka in collaboration with Aidan Draper

### PURE Math Research Program

UNIVERSITY OF HAWAII AT HILO

*Jun. 2015 – Jul. 2015*

*Hilo, HI, USA*

- Investigating the properties of monotone catenary degree in numerical monoids
- Advised by Roberto Pelayo and Brian Wissman in collaboration with Cameron J. Wright and Jenna Zomback

# Publications & Preprints

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- 2023     **Dynamic Vertex Replacement Grammars** · arXiv  
Daniel Gonzalez Cedre · Justus Isaiah Hibshman · Timothy La Fond · Grant Boquet · Tim Weninger
- 2023     **Motif Mining: Finding and Summarizing Remixed Image Content** · WACV  
William Theisen · Daniel Gonzalez Cedre · Zachariah Carmichael · Daniel Moreira · Tim Weninger · Walter Scheirer
- 2022     **The Infinity Mirror Test for Graph Models** · TKDE  
Satyaki Sikdar · Daniel Gonzalez Cedre · Trenton W. Ford · Tim Weninger
- 2021     **Temporal Egonet Subgraph Transitions** · arXiv  
Daniel Gonzalez Cedre · Sophia Abraham · Lucas Parzianello · Eric Tsai
- 2021     **Joint Subgraph-to-Subgraph Transitions** · WSDM  
Justus Isaiah Hibshman · Daniel Gonzalez Cedre · Satyaki Sikdar · Tim Weninger
- 2015     **Monotone Catenary Degree in Numerical Monoids** · arXiv  
Daniel Gonzalez Cedre · Cameron Wright · Jenna Zomback

# Talks & Lectures

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- 2022     **Undergraduate Engineering Discernment Lecture** · Invited guest lecture · University of Notre Dame
- 2021     **Mining Temporal Hypergraphs with Graph Grammars** · Invited guest lecture · Rose-Hulman Institute of Technology
- 2020     **Undergraduate Engineering Discernment Lecture** · Invited guest lecture · University of Notre Dame
- 2020     **The Infinity Mirror Test for Graph Generators** · Full talk · SIAM Network Science
- 2020     **The Infinity Mirror Test for Graph Generators** · Poster presentation · ND CSE 14<sup>th</sup> Annual Poster Conference
- 2015     **Monotone Catenary Degree in Numerical Monoids** · Poster presentation · FIU McNair Scholars Research Conference

# Service

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- Reviewer** · TKDE: Transactions on Knowledge Data and Engineering
- Reviewer** · JoCO: Journal of Combinatorial Optimization
- Reviewer** · WSDM: Web Search and Data Mining
- Reviewer** · ISAC: International Conference on Autonomous Systems

# Teaching Experience

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## Instructor of Record

*University of Notre Dame*  
*Spring 2023*

### DISCRETE MATHEMATICS

- Designed and curated every aspect of the course
- Planned and delivered lectures three times per week and provided custom lecture notes
- Held 4 weekly office hours and a weekly (optional) 4-hour-long recitation section
- Created and graded weekly problem sets, two midterm exams, and a final exam
- Performed all duties without the help of a TA for a class of 24 students

## Co-organizer

*University of Notre Dame*  
*Fall 2022*

### GRAPH THEORY DIRECTED READING

- Created weekly assignments for an undergraduate student on various topics in Graph Theory
- Advised, planned, and lectured in collaboration with Justus Hibshman

## Instructor of Record

*University of Notre Dame*  
*Spring 2022*

### DISCRETE MATHEMATICS

- Designed and curated every aspect of the course
- Delivered lectures three times per week
- Held 3 weekly office hours and a weekly (optional) 3.5-hour-long recitation section
- Created and graded weekly problem sets, two midterm exams, and a final exam
- Performed all duties without the help of a TA for a class of 26 students

## Recitation Instructor

*Florida State University*  
*Spring 2019*

### DISCRETE MATH

- Delivered weekly recitation lectures to two sections of students
- Held office hours, proctored weekly quizzes, and graded assignments

## Instructor of Record

PRECALCULUS ALGEBRA

- Planned and delivered lectures three times per week
- Held office hours and proctored quizzes and exams

*Florida State University*

*Fall 2018*

# Teaching Assistance

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## Graduate Teaching Assistant

DISCRETE MATH · DATA STRUCTURES

- Graded assignments and held office hours

*University of Notre Dame*

*Fall 2019 – Spring 2020*

## Graduate Teaching Assistant

BUSINESS CALCULUS · PRECALCULUS ALGEBRA · TRIGONOMETRY · FINITE MATH · LIBERAL ARTS MATH

- Proctored quizzes and exams

*Florida State University*

*Fall 2017 – Fall 2018*

## Undergraduate Learning Assistant

GRAPH THEORY · INTRO. TO ADV. MATH · CALCULUS I & 2 · DISCRETE MATH · FINITE MATH · COLLEGE ALGEBRA

- Held recitation sections and office hours
- Assisted professors with in-class duties
- Graded assignments

*Florida International University*

*Spring 2013 – Summer 2017*