Daniel **Gonzalez Cedre**

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Education

Doctor of Philosophy · *Computer Science* · *in progress*   *Jun. 2019* – *Apr. 2025*
UNIVERSITY OF NOTRE DAME · DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING   *Notre Dame, IN, USA*
- *"A Transformational Approach to Graph Learning,"* advised by Tim Weninger
- Graduate Student Recruitment Representative

Master of Science · *Financial Mathematics*   *Aug. 2017* – *May 2019*
FLORIDA STATE UNIVERSITY · DEPARTMENT OF MATHEMATICS   *Tallahassee, FL, USA*
- Advised by Arash Fahim and mentored by Alec Kercheval

Bachelor of Science · *Mathematics* · *Computer Science* · *cum laude*   *Aug. 2012* – *May 2016*
FLORIDA INT'L UNIVERSITY · DEPARTMENT OF MATH AND STATS · DEPARTMENT OF MATHEMATICAL SCIENCES   *Miami, FL, USA*
- Mentored by Mirroslav Yotov and George Kafkoulis
- Member of the competitive programming team

Associate of Arts · *Mathematics* · *magna cum laude*   *Jun. 2010* – *Apr. 2012*
MIAMI-DADE COLLEGE · SCHOOL FOR ADVANCED STUDIES   *Miami, FL, USA*
- Dual enrollment through the School for Advanced Studies' Wolfson campus

Publications & Preprints

2024   **This Probably Looks *Exactly* Like That: An Invertible Prototypical Neural Network** · ECCV
Zachariah Carmichael* · Timothy Redgrave* · *Daniel Gonzalez Cedre** · Walter Scheirer   *EQUAL CONTRIBUTION

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   *EQUAL CONTRIBUTION

2015   **Monotone Catenary Degree in Numerical Monoids** · ARXIV
Daniel Gonzalez Cedre · Cameron Wright · Jenna Zomback

Talks & Lectures

2024   **This Probably Looks *Exactly* Like That** · *Poster presentation* · *European Conference on Computer Vision*

2023   **Explaining Anomalies in Graphs with Grammars** · *Internship talk* · *Deloitte*

2023   **A Transformational Approach to Graph Learning** · *PhD candidacy* · *University of Notre Dame*

2023   **Undergraduate Engineering Discernment Lecture** · *Invited guest lecture* · *University of Notre Dame*

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 14th Annual Poster Conference*

2015   **Monotone Catenary Degree in Numerical Monoids** · *Poster presentation* · *FIU McNair Scholars Research Conference*

Awards & Honors

2024	**Outstanding Instructor Honorable Mention** · *Graduate Student Government* · *University of Notre Dame*
2024	**Outstanding Graduate Student Teaching Award** · *Kaneb Center for Teaching & the Graduate School* · *University of Notre Dame*
2024	**Kaneb Outstanding Instructor of Record** · *Department of Computer Science and Engineering* · *University of Notre Dame*
2024	**CSE Outstanding TA Award** · *Department of Computer Science and Engineering* · *University of Notre Dame*
2019	**Deans' Graduate Fellowship** · *The Graduate School* · *University of Notre Dame*
2017	**Dean's Scholarship** · *The Graduate School* · *Florida State University*
2016	**GEM University Fellow** · *National GEM Consortium* · *University of Chicago*
2016	**Outstanding Achievement in Mathematics** · *College of Arts, Sciences, and Education* · *Florida Int'l University*
2015	**Second place award for *"Monotone Catenary Degree [...]"*** · *McNair Scholars Research Conference* · *Florida Int'l University*
2014	**Third place award for *"Pancake Simulator"*** · *HackFSU Hack-a-thon* · *Florida State University*
2015	**McNair Scholar, 12th cohort** · *McNair Scholars Program* · *Florida Int'l University*
2012	**Florida Bright Futures Scholarship** · *Office of Student Scholarship and Grants* · *State of Florida*
2012	**National Hispanic Scholarship** · *Office of Admissions* · *Florida Int'l University*

Internships & Collaborations

Data Scientist
May 2023 – Aug. 2023
DELOITTE · AI CENTER FOR EXCELLENCE
South Bend, IN, USA
- Worked to develop a grammar-based explainer for graph neural networks
- Advised by Sanmitra Bhattacharya and Salvador Aguiñaga

Research Scientist
May 2022 – Aug. 2022
LAWRENCE LIVERMORE NATIONAL LABORATORY · APPLIED STATISTICS GROUP
Livermore, CA, USA
- Developed a dynamic vertex-replacement graph grammar
- Advised by Grant Boquet and Timothy La Fond

Research Scientist
Jun. 2021 – Aug. 2021
LAWRENCE LIVERMORE NATIONAL LABORATORY · APPLIED STATISTICS GROUP
Livermore, CA, USA
- Worked to find optimal dendrogram decompositions for vertex-replacement graph grammars
- Advised by Grant Boquet and Timothy La Fond

Research Scientist
Nov. 2020 – Feb. 2021
LAWRENCE LIVERMORE NATIONAL LABORATORY · APPLIED STATISTICS GROUP
Livermore, CA, USA
- Modeled temporal graphs with hidden Markov models and vertex-replacement graph grammars
- Advised by Grant Boquet and Timothy La Fond

Contactless Fingerprint Collection
Jun. 2019 – Jan. 2020
UNIVERSITY OF NOTRE DAME · COMPUTER VISION RESEARCH LAB
Notre Dame, IN, USA
- Sponsored by West Virginia University in collaboration with Aidan Draper
- Advised by Adam Czajka

PURE Math Research Program
Jun. 2015 – Jul. 2015
UNIVERSITY OF HAWAII AT HILO · DEPARTMENT OF MATHEMATICS
Hilo, HI, USA
- Investigated monotone catenary degree for numerical monoids with Cameron J. Wright and Jenna Zomback
- Advised by Roberto Pelayo and Brian Wissman

Service

Reviewer	**Springer DMKD**	*Data Mining and Knowledge Discovery*
Reviewer	**IEEE TKDE**	*Transactions on Knowledge Data and Engineering*
Reviewer	**Springer JoCO**	*Journal of Combinatorial Optimization*
Reviewer	**ACM WSDM**	*Web Search and Data Mining*
Reviewer	**IEEE ICAS**	*International Conference on Autonomous Systems*

Teaching Experience

Principles of Computing
University of Notre Dame
Fall 2024

INSTRUCTOR OF RECORD · CSE 10001 · 36 STUDENTS

terminal interfaces · shell commands · Python types · functions · iteration · sorting · file I/O · recursion · libraries

- Designed an approach to the fundamentals of applied computing for non-majors with zero background
- Planned and delivered two 75-minute lectures per week
- Crafted and graded two midterm exams
- Created weekly problem sets with solutions
- Designed periodic exercise sets in collaboration with teaching assistants
- Managed one undergraduate and two graduate teaching assistants who helped with grading and office hours

Discrete Mathematics
University of Notre Dame
Spring 2024

INSTRUCTOR OF RECORD · CSE 20110 · 31 STUDENTS

ZOL · FOL · ZF set theory · algebra · induction · number theory I · combinatorics · infinity · number theory II · RSA

- Updated and improved previous design for a proof-based course on logic & mathematical foundations
- Continually improved and expanded previous lecture notes
- Planned and delivered three 50-minute lectures per week
- Created two midterms, one final, and weekly problem sets based on lectures
- Wrote solutions to all assignments
- Held four hours of optional problem-solving recitations per week
- Held one-on-one and small-group office hours averaging eight hours per week
- Managed four undergraduate and one graduate teaching assistant who helped with grading and office hours

Discrete Mathematics
University of Notre Dame
Fall 2023

INSTRUCTOR OF RECORD · CSE 20110 · 180 STUDENTS

ZOL · FOL · ZF set theory · Peano arithmetic · induction · number theory I · functions · infinity · number theory II

- Overhauled and improved design for a proof-based course on logic & mathematical foundations
- Began drafting serious lecture notes over the summer and throughout the semester
- Planned and delivered two 75-minute lectures per week
- Created two midterms, one final, and weekly problem sets based on lectures
- Wrote solutions to all assignments
- Held four hours of optional problem-solving recitations per week
- Held one-on-one and small-group office hours averaging 20 hours per week
- Managed ten undergraduate and one graduate teaching assistant who helped with grading and office hours

CSE Summer Enrichment Program
University of Notre Dame
Summer 2023

INSTRUCTOR AND COACH · SUMMER LECTURE SERIES · 20 STUDENTS

- Planned and delivered one 75-minute lecture per week
- Coordinated topics that included recursion, finite combinatorics, graph algorithms, and logic
- Met with students to help them with their summer research and provide guidance
- Collaborated with William Theisen

Discrete Mathematics
University of Notre Dame
Spring 2023

INSTRUCTOR OF RECORD · CSE 20110 · 21 STUDENTS

FOL · ZF set theory · recursion · induction · asymptotic analysis · cardinality · number theory · RSA · graph theory

- Improved previous design of a course on logic, foundations, and proof-writing for computer science majors
- Experimented with coding assignments that complemented course topics and themes
- Updated brief lecture notes throughout the semester
- Planned and delivered three 50-minute lectures per week
- Designed and graded weekly problem sets, two midterm exams, and a final exam
- Wrote solutions to all assignments
- Held four office hours per week
- Held four hours of optional problem-solving recitations per week

Graph Theory
University of Notre Dame
Fall 2022

CO-ORGANIZER · DIRECTED READING · 1 STUDENT

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

Discrete Mathematics

INSTRUCTOR OF RECORD · CSE 20110 · 25 STUDENTS

University of Notre Dame
Spring 2022

propositions · FOL · ZF set theory · functions · cardinality · induction · relations · number theory · RSA · graph theory

- Designed from-scratch a course on mathematical foundations and proof-writing for computer science majors
- Wrote brief lecture notes throughout the semester
- Planned and delivered three 50-minute lectures per week
- Created and graded weekly problem sets, two midterm exams, and a final exam
- Wrote solutions to all assignments
- Held four hours of optional problem-solving recitations per week
- Held three office hours per week

Discrete Math I

RECITATION INSTRUCTOR · MAD 2104 · 60 STUDENTS

Florida State University
Spring 2019

- Delivered 50-minute recitation lectures to two sections once per week
- Proctored weekly quizzes and graded assignments
- Held three office hours per week

Precalculus Algebra

INSTRUCTOR OF RECORD · MAC 1104 · 35 STUDENTS

Florida State University
Fall 2018

- Planned and delivered three 50-minute lectures per week
- Proctored quizzes and exams
- Held three office hours per week

Teaching Assistance

Graduate Teaching Assistant

DISCRETE MATH · DATA STRUCTURES

University of Notre Dame
Fall 2019 – Spring 2020

- Held three office hours per week
- Graded assignments

Graduate Teaching Assistant

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

Florida State University
Fall 2017 – Fall 2018

- Proctored quizzes and exams

Undergraduate Learning Assistant

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

Florida Int'l University
Spring 2013 – Summer 2017

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