Daniel **Gonzalez Cedre**

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Education

Doctor of Philosophy · **Computer Science** · *in progress* — ***University of Notre Dame***
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING — JUN. 2019 – APR. 2025

- *"A Transformational Approach to Graph Learning,"* advised by Tim Weninger
- Graduate Student Recruitment Representative

Master of Science · **Financial Mathematics** — ***Florida State University***
DEPARTMENT OF MATHEMATICS — AUG. 2017 – MAY 2019

- Advised by Arash Fahim and mentored by Alec Kercheval

Bachelor of Science · **Mathematics** · **Computer Science** · ***cum laude*** — ***Florida Int'l University***
DEPARTMENT OF MATHEMATICS AND STATISTICS · DEPARTMENT OF MATHEMATICAL SCIENCES — AUG. 2012 – MAY 2016

- Mentored by Mirroslav Yotov and George Kafkoulis
- Member of the competitive programming team

Associate of Arts · **Mathematics** · ***magna cum laude*** — ***Miami-Dade College***
SCHOOL FOR ADVANCED STUDIES, WOLFSON CAMPUS — JUN. 2010 – APR. 2012

- 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 — *Deloitte Touche Tohmatsu*
AI CENTER FOR EXCELLENCE — MAY 2023 – AUG. 2023
- Worked to develop a grammar-based explainer for graph neural networks
- Advised by Sanmitra Bhattacharya and Salvador Aguiñaga

Research Scientist — *Lawrence Livermore Nat'l Laboratory*
APPLIED STATISTICS GROUP — MAY 2022 – AUG. 2022
- Developed a dynamic vertex-replacement graph grammar
- Advised by Grant Boquet and Timothy La Fond

Research Scientist — *Lawrence Livermore Nat'l Laboratory*
APPLIED STATISTICS GROUP — JUN. 2021 – AUG. 2021
- Worked to find optimal dendrogram decompositions for vertex-replacement graph grammars
- Advised by Grant Boquet and Timothy La Fond

Research Scientist — *Lawrence Livermore Nat'l Laboratory*
APPLIED STATISTICS GROUP — NOV. 2020 – FEB. 2021
- Modeled temporal graphs with hidden Markov models and vertex-replacement graph grammars
- Advised by Grant Boquet and Timothy La Fond

Contactless Fingerprint Collection — *University of Notre Dame*
COMPUTER VISION RESEARCH LAB — JUN. 2019 – JAN. 2020
- Sponsored by West Virginia University in collaboration with Aidan Draper
- Advised by Adam Czajka

PURE Math Research Program — *University of Hawaii at Hilo*
DEPARTMENT OF MATHEMATICS — JUN. 2015 – JUL. 2015
- 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

INSTRUCTOR OF RECORD · CSE 10001 · 36 STUDENTS — FALL SEMESTER 2024

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

INSTRUCTOR OF RECORD · CSE 20110 · 31 STUDENTS — SPRING SEMESTER 2024

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

INSTRUCTOR OF RECORD · CSE 20110 · 180 STUDENTS — FALL SEMESTER 2023

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

INSTRUCTOR AND COACH · SUMMER LECTURE SERIES · 20 STUDENTS — SUMMER SEMESTER 2023

fundamentals of computer science and discrete math for students lacking background

- Planned and delivered one 75-minute lecture per week
- Met with students to help them with their summer research and provide guidance
- Collaborated with William Theisen

Discrete Mathematics

University of Notre Dame

INSTRUCTOR OF RECORD · CSE 20110 · 21 STUDENTS — SPRING SEMESTER 2023

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

CO-ORGANIZER · DIRECTED READING · 1 STUDENT — FALL SEMESTER 2022

graph coloring · weisfeiler-lehman · isomorphism · graph duality · flow algorithms · gale-shapley · infinite graphs

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

Discrete Mathematics

University of Notre Dame

INSTRUCTOR OF RECORD · CSE 20110 · 25 STUDENTS

SPRING SEMESTER 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

Florida State University

RECITATION INSTRUCTOR · MAD 2104 · 60 STUDENTS

SPRING SEMESTER 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

Florida State University

INSTRUCTOR OF RECORD · MAC 1104 · 35 STUDENTS

FALL SEMESTER 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

University of Notre Dame

DISCRETE MATH · DATA STRUCTURES

FALL 2019 – SPRING 2020

- Held three office hours per week
- Graded assignments

Graduate Teaching Assistant

Florida State University

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

FALL 2017 – FALL 2018

- Proctored quizzes and exams

Undergraduate Learning Assistant

Florida Int'l University

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

SPRING 2013 – SUMMER 2017

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