

Manuel Santana

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EDUCATION

PhD. Applied and Computational Mathematics June 2027 (expected)
California Institute of Technology, Pasadena California

B.S. Computational Mathematics, Computer Science Minor May 2022
Utah State University, Logan, Utah 3.90 Cum. GPA

Research Interests

I am broadly interested in developing scalable PDE solvers for complex geometries. I currently focus on wave equation solves and scattering problems and providing time domain simulations.

Research Articles

Published:

Brauer A, Krawick M, and **Santana M.** 2020. Numerical Analysis of the 1-D Parabolic Optimal Transport Problem, *SIAM SIURO*, Vol 14:150-166

Beasley L, Brown D, Mousley J, and **Santana M.** 2023 Cordiality of Digraphs, *Journal of Algebra Combinatorics Discrete Structures and Applications*, Vol 10, Issue 1, pp.1-13

Huynh M, **Santana M.** 2021. Alternating Minimization for Computed Tomography with Unknown Geometry Parameters, *SIAM SIURO*, Vol 15:62-76, 2022 DOI:10.1137/21S1441638

Submitted:

Beasley L, Brown D, Mousley J, and **Santana M.** 2020. (2,3) Cordial Paths and Trees, arXiv:2012.10591 Submitted to *Proceedings of the 49th Southeastern Conference on Combinatorics, Graph Theory, and Computing*.

Beasley L, Brown D, Mousley J, and **Santana M.** 2020. (2,3) Cordial Oriented Hypercubes, arXiv 2012.11091. Submitted to *Proceedings of the 49th Southeastern Conference on Combinatorics, Graph Theory, and Computing*. .

Technical Skills

- Python including Numpy, Pandas, Seaborn, and Scikit Learn
- Java
- Matlab including parallel computing toolbox, optimization toolbox, and image processing toolbox.

- Julia
- C/C++ including OpenMP, MPI, and CUDA
- Git
- Latex

Professional Experience

SULI Intern

June 2022- August 2022

National Renewable Energy Laboratory (NREL)

- I implemented code in python to train several transformer models experimental battery again data in an effort to predict battery lifetime performance.

Teaching Experience

Linear Algebra Recitation Leader

August 2020 – August 2021

Utah State University, Logan, Utah

- Teach four recitations for an introductory Linear Algebra course weekly.
- Assist students in office hours with understanding course material.

Awards

Goldwater Scholar	March 2021
NSF Graduate Research Fellowship	April 2022
Undergraduate Researcher of the Year - College of Science, Utah State University	2021
Undergraduate Researcher of the Year - Math Department, Utah State University	2021
Hispanic Scholarship Fund Scholar	May 2020
Utah State University Presidential Scholar	August 2016

Clubs and Organizations

Utah State Science Council – Undergraduate Research VP

August 2021 – Current

- Promoted undergraduate research on campus by organizing a research presentation competition, and an REU application workshop night.

College of Science Peer Mentorship Program - Mentor

August 2021 – Current

- Met weekly with a freshman student to offer help with knowing what classes to take, developing good study habits, and obtaining a research position.

Emory REU Activities Committee

May 2021 – July 2021

- Planned weekly social activities for the REU.