

Alejandro Medina

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EDUCATION

Ph.D. in Computer Science

Baylor University, Waco, TX

Expected Start: August 2024

- Research Interests: Neural Network Architecture, Reinforcement Learning, Generative Deep Learning, Predictive Modeling, Hyperparameter Optimization, Time Series Analysis, Genetic Algorithms, Evolutionary Computation, Algorithm Design, Approximation Algorithms, Game Theory Algorithms, Scheduling Algorithms.

Bachelor of Science in Computer Science

Southwestern University, Georgetown, TX

August 2021– May 2024

- Distinctions: Magna Cum Laude (GPA 3.88), Paideia Scholar, Dean's List (August 2021– May 2024)
- Minors: Mathematics and Data Science
- Honors: Pi Mu Epsilon (President), Upsilon Pi Epsilon (Vice President), Omicron Delta Kappa
- Organizations: Computer Science Club, Latinos Unidos (Event Coordinator), Honor Code Council (Vice President), LatinXcel, Mathematics Club, University Committee on Discipline

RESEARCH AWARDS/HONORS

CCSC Undergraduate Poster Competition 3rd Place (April 2024)

- 3rd Place Award for the Consortium for Computing Sciences in Colleges (CCSC) South Central Region Undergraduate Poster Competition for *SNITCH: Southwestern's Newest Innovation to Cultivate Honor*.

Computing Research Association's Outstanding Undergraduate Researcher Award (Jan 2024)

- National award that recognizes up to four undergraduate students in North American colleges and universities who show outstanding potential in an area of computing research.

CCSC Undergraduate Poster Competition 3rd Place (March 2023)

- 3rd Place Award for the Consortium for Computing Sciences in Colleges (CCSC) South Central Region Undergraduate Poster Competition for *Using Quality Diversity to Evolve Flying Machines in Minecraft*.

CCSC Undergraduate Poster Competition Honorable Mention (March 2023)

- Honorable Mention Award for the Consortium for Computing Sciences in Colleges (CCSC) South Central Region Undergraduate Poster Competition for *Interactive Evolution of Novel Shapes in Minecraft*.

OTHER AWARDS/HONORS

Five Points of Pirate Pride Award (April 2024)

- Southwestern University's Five Points of Pirate Pride award recognizes five graduating students each year who exemplify the university's core values. This is the highest honor the Division of Student Life and the Student Government Association bestows upon a graduating student.

Grogan Lord Award in Computer Science (March 2024)

- This is an annual award issued by the Southwestern University Math/Computer Science department awarded to a single outstanding student determined by the departmental faculty.

Designated Matriculation Speaker (August 2023)

- Selected to give matriculation speech to the incoming freshman class of 2027 at Southwestern University.

2023 Hispanic Scholarship Fund (HSF) Scholar (July 2023)

- Designated Hispanic scholar from a highly competitive pool of over 124,400 applicants.

Jack Frost Citizen of the Month (May 2021)

- The Jack Frost Citizen of the Month Award is given to high school seniors who exemplify excellence in academics, extracurricular, and volunteering.

PUBLICATIONS

- **A. Medina**, M. Richey, M. Mueller, and J. Schrum, "[Evolving Flying Machines in Minecraft Using Quality Diversity](#)", In Proceedings of the Genetic and Evolutionary Computation Conference (GECCO '23). Association for Computing Machinery, New York, NY, USA, 1418–1426.
- B. Anthony, **A. Medina**, and M. Mueller, "[Prioritizing Self, Team, or Job: Trends in Sincerity in Cooperative Polls](#)", 19th International Conference on Cooperative Design, Visualization, and Engineering (CDVE 2022). LNCS, Vol. 13492, Springer, pp. 34-44, September 2022.

RESEARCH EXPERIENCE

Undergraduate Research Assistant | Southwestern University, Georgetown, TX February 2023 – August 2023

- Collaborated on research related to algorithmic design and evaluation with Dr. Barbara Anthony.
- Focused on Dial-a-Ride problems (DARP) to optimize vehicle route scheduling for maximizing the number of rides provided by their deadline using a single vehicle. Investigated the Earliest Deadline First (EDF) algorithm.
- Implemented and evaluated various algorithms using Python to measure and compare their efficiency and accuracy.

Undergraduate Research Assistant | Southwestern University, Georgetown, TX May 2022 – July 2022

- Conducted research in Artificial Intelligence under the supervision of Dr. Jacob Schrum, with two other students.
- Developed and tested quality diversity algorithms to create AI capable of generating flying machines in Minecraft, a complex task for many human players.
- Responsible for designing and implementing new binning schemes, creating the main shape generator for the experiment, and automating experiments through batch files with various parameter configurations.

Undergraduate Research Assistant | Southwestern University, Georgetown, TX January 2022 – May 2022

- Researched Approval Voting Theory in collaboration with Dr. Barbara Anthony and one other student.
- Investigated trends in cooperative polls, specifically Doodle Polls, to analyze user sincerity in scheduling meetings.
- Utilized NumPy and Pandas for processing results from a human subjects study.

WORK EXPERIENCE

Undergraduate Research Mentor | Southwestern University, Georgetown, TX January 2024 – May 2024

- Mentored first-year students in a small cohort on research projects.
- Prepared and delivered material for 2-hour weekly sessions.
- Assisted students with Python coding for voter theory techniques.

Business Intelligence and Data Analytics Intern | Hy Cite Enterprises, Madison, WI June 2023 – August 2023

- Applied machine learning algorithms for predictive modeling, anomaly detection, and clustering using Python and Microsoft Power BI. Presented findings to company audiences to support financial decision-making based on data trends.
- Researched and implemented optimization and performance techniques for the company's data warehouse by analyzing query execution plans and identifying bottlenecks.
- Automated agile reporting processes using Python and Snowflake.

- Tutored students in Computer Science I and II, helping them with projects and assignments.
- Provided additional assistance outside of regular tutoring hours.
- Prepared students of varying levels for academic success in computer science courses.

PRESENTATIONS

- “SNITCH: Southwestern’s Newest Innovation to Cultivate Honor.” Presented at the South Central Regional Meeting of the Consortium of Computing Sciences in Colleges in Nacogdoches, TX, April 5th, 2024. **(3rd Place: Undergraduate Poster Competition)**
- “Evaluating an Earliest Deadline First Algorithm for a Dial-a-Ride Problem.” Presented at the 2023 CMD-IT/ACM Richard Tapia Celebration of Diversity in Computing Conference in Dallas, TX, September 16th, 2023.
- “Using Quality Diversity to Evolve Flying Machines in Minecraft.” Presented at the South Central Regional Meeting of the Consortium of Computing Sciences in Colleges in Nacogdoches, TX, March 31, 2023. **(3rd Place: Undergraduate Poster Competition)**
- “Interactive Evolution of Novel Shapes in Minecraft.” Presented at the South Central Regional Meeting of the Consortium of Computing Sciences in Colleges in Nacogdoches, TX, March 31, 2023. **(Honorable Mention: Undergraduate Poster Competition)**
- “Prioritizing Self, Team, or Job: Trends in Sincerity in Cooperative Polls.” Presented at 19th International Conference on Cooperative Design, Visualization and Engineering virtually in September 2022.

SKILLS & INTERESTS

Technical: Java, Python, C++, C, R, Lisp, Haskell, Prolog, SQL, Snowflake, PHP, HTML, JSON, JavaScript, NASM x86 Assembly, Git, CSS, LaTeX, Flutter, Android Studio, React, Matplotlib, Docker

Non-Technical: Public speaking, presentation skills, technical writing, team leadership, mentorship, experimental design, statistical analysis, troubleshooting, collaboration, networking, empathy, innovative thinking, creative problem-solving

Languages: Spanish (Fluent), English (Fluent)

Musical instruments: Violin

Sports: Soccer, Track & Field