

Mario Jerez

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Education

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| Doctor of Philosophy in Computer Science , University of Minnesota | Sept 2024 – Present |
| • GPA: 4.00/4.00 | |
| Bachelors of Arts , Sarah Lawrence College | Sept 2018 – May 2021 |
| • GPA: 3.96/4.00 | |
| International Baccalaureate Diploma Programme , Keystone Academy in Beijing | Aug 2016 – May 2018 |

Awards

NSF Research Traineeship: Circularity Impact Program (2025) – Travel and Equipment Award for research related to sustainability

Hispanic Scholarship Fund Scholar (2019) – merit-based award

Experience

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| Implementation Consultant (Developer) , FAST Enterprises – San Juan, PR | Feb 2023 – Aug 2024 |
| <ul style="list-style-type: none">• Created new Incentives Return for taxpayers in Puerto Rico with a small, bilingual team under a tight deadline• Worked closely with the Department of Treasury in Spanish to correctly validate information submitted by taxpayers while creating an excellent user experience in both English and Spanish• Transformed business requests into software changes by writing or modifying code in Visual Basic and editing configuration tables• Researched problems by querying taxpayer data using Microsoft SQL Server Management Studio• Resolved errors that occurred in the software used by government employees and in the website used by taxpayers, while working in the Production Support team• Delivered solutions by unit testing, writing test scenarios and working closely with testers, and migrating changes to the Testing, Staging, and eventually, Production environment. | |
| Full Stack Product Developer , Avolution Inc. – Remote | May 2022 – Sep 2022 |
| Software Consultant , Avolution Inc. – Remote | Aug 2021 – May 2022 |
| <ul style="list-style-type: none">• Delivered new software features to specified requirements using the .NET Framework• Found and fixed software defects• Provided level 3 support to customers in the Americas, combining knowledge accrued from consulting with software development knowledge• Designed and recorded the ABACUS REST API course for the Learning Management System• Delivered online trainings to clients on ABACUS scripting and the ABACUS REST API in English and Spanish• Developed requested scripts (in VB and C#) for clients who bought expert assistance hours, and worked closely with Enterprise Architects to deliver a product that met their needs• Developed a custom visualization tools such as stacked bar chart for customers to use around the world• Wrote articles on the Knowledge Portal with detailed instructions for clients on how to use the scripts and visualizations that I designed• Trained technical consultants in scripting and the REST API• Provided Customer Support in the Helpdesk and on video calls | |

Teaching Experience

Graduate Teaching Assistant, University of Minnesota – Minneapolis, MN Aug 2024 – Present

- Help manage a class with 250 students and 15 undergraduate Teaching Assistants
- Host weekly office hours to help students with their assignments and improve their understanding
- Assign grading to undergraduate Teaching Assistants' and answer grading-related questions
- Write example solutions for projects and rubrics for assignments
- Proofread and improve exams, labs, and project descriptions before they are released to students
- Write quiz questions

Online Tutor, GoPeer – Remote Apr 2020 – Aug 2021

- Tutored students K-College in Computer Science (Python, Java, Javascript), Physics, Mathematics (General, Calculus, Linear Algebra), Spanish, Writing, and Reading in 45 to 90 minute lessons
- Helped students with homework, projects, and wrote personalized assignment to deepen their understanding
- Individually tutored over 50 students and hosted over 500 lessons with 100% Customer Satisfaction Rate (See Reviews)
- Featured as a Top Tutor on GoPeer social media and in article (See Article)

Mathematics and Calculus Tutor, Sarah Lawrence College – Bronxville, NY Sept 2020 – May 2021

Computer Science Tutor & Lab Assistant, Sarah Lawrence College – Bronxville, NY Sept 2020 – Dec 2020

- Tutored College Students in general Mathematics, Calculus I and II, Linear Algebra and Multivariable Calculus for the Math Resource Center
- Hosted regular Zoom sessions to help students understand math concepts and to help them progress in their homework assignments
- Assisted and answered questions in all labs for the Introduction to Computer Science course taught in Python
- Hosted regular tutoring sessions to help students with their programming assignments and final projects

Teaching Fellow and Residential Assistant, Keystone Academy – Beijing, China Jul 2019 – Aug 2019

- Taught presentation skills in English to ESL High School students
- Coordinated games and activities for children in K-12
- Dorm proctored for the English Immersion Program

Program Mentor, Keru – Phnom Penh, Cambodia May 2019 – June 2019

- Researched the issue of arsenic-contaminated groundwater in Cambodia and wrote a survey for High School students to learn about it
- Guided students in interviewing locals and conducting tests on water samples from various provinces
- Built an affordable water filtration system that utilized rusted nails to remove arsenic from groundwater

Projects

Farm Robotics Challenge Jan 2025 - Present

- Leading a team of graduate and undergraduate students to address a challenge faced by local farmers
- Team Lead of the sub-team working on a Coverage Path Planning Problem with drones
- Communicating with farmers in the area to discuss their challenges and understand their needs
- Established a partnership with a local farmer to develop a solution tailored to their specific needs

Luminescent Ant Foraging Nov 2024 - Present

- Developed a decentralized, multi-agent algorithm where agents use luminescence-based communication to find resources and take them to their nest
- Adapted the Glowworm Swarm Optimization algorithm, a variant of the Ant Colony Optimization algorithm, for finding the resources
- Implemented the algorithm with robots in a simulated environment
- Implementing the algorithm with physical robots

- Tools Used: PettingZoo library, ROS, Gazebo, Python, Raspberry Pi, Phasespace system

Technologies

Languages: Python, Java, Visual Basic, C#, SQL, JavaScript

Frameworks and Libraries: ROS, Gazebo, PettingZoo, Gymnasium (proposed enhancement and contributed), Django, React, Pytest, .NET, TensorFlow, Keras, NumPy, Pandas, Matplotlib

Tools: Git, Visual Studio Code, Microsoft SQL Server Management Studio, Analytic Solver (Excel add-in)