



# UPRA Swarmathon Team

*veni mār̃s, vedi mār̃s , vici mār̃s*

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**Mentor:** Dr. Eliana Valenzuela-Andrade

## **Team Members:**

Marcos Bosquez-Perez

Eliezer C. Caro-Suarez

Javier Olmo-Martinez

Jose Peña-Perez

Stephanie Peña-Rivera

Cheylianie Rivera- Rivera

Kevin Rolón-Domena

Genesis Rosado Martinez

Jesus Santana-Roman

## Our Team

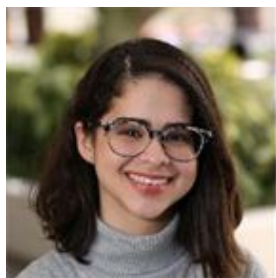
Our team is made up of computer sciences program students of many diverse experiences in robotics. Some of them have previous experiences in other platforms as VEX, while for other NASA Swarmathon was their first contact with robotics. We had the motivation to learn about robotics, simulation and other relevant topics for us and engaged other students to participate on this wonderful initiative. Next, we will present briefly our members. (more information XXX)



**Eliana Valenzuela-Andrade** holds a doctoral degree in Computing, Information Sciences and Engineering, and a Master in Engineering Management Systems from the University of Puerto Rico, Mayagüez Campus, also a BS in Industrial Engineering from the Universidad de los Andes, in Bogotá, Colombia. She has nearly ten years of teaching experience and four years of research experience. The research areas of Dr. Valenzuela-Andrade are Educational Robotics, Database, Metadata Database Design of Experiments, among others. She is part of Latinas in Computing, FemProf and CAHSI. Currently, she is Associate Professor in the Computer Sciences Department at University of Puerto Rico at Arecibo. Since 2015, Dr. Valenzuela-Andrade is a mentor of a **NASA Swarmathon** Team at UPRA.



**Cheylianie Rivera-Maldonado** is a Computer Science senior student at the University of Puerto Rico at Arecibo. She has been doing research for four consecutive semesters at UPRA. Her research areas include iOS mobile application development for the UPRA community, and the development of efficient search algorithms for autonomous robots. She also completed a internship with the Arecibo Observatory past summer, where she built a web-based status display for the radio telescope. She's currently participating for the second time in the **NASA Swarmathon** Challenge at UPRA as student team leader.



**Stephanie Peña-Rivera** is a junior computer science and research student at the University of Puerto Rico at Arecibo. She started studying Microbiology at the same institution before transferring to the computer science department. Currently, she is part of the Robotics Development Laboratory at UPRA, where she is working with the NASA Swarmathon project. Her tasks include troubleshooting, debugging, improving the robots' search method, learning ROS, and implementing swarm robotics algorithms. She aspires to improve her skills in robotics, computer science, and to aid in the technological advancement for future NASA space exploration missions. In the

future, she plans to pursue graduate school in the computer science field focusing on cybersecurity, artificial intelligence or robotics.



**Eliezer C. Caro-Suarez** is a senior computer science student at University of Puerto Rico at Arecibo (UPRA). He has completed two internships at Verizon Wireless in which he worked as a web developer. The goal of the first internship was to create a web platform for a system that schedules continuing education for employees. In the second internship, he developed a tool for the NRB Roaming Team. Currently, he is part of the UPRA Robotics Team as a robot designer/coach. Additionally, he provides networking assistance to the **NASA Swarmathon** project between the

rovers and the master computer. In the future, he would like to pursue a master's degree in the cyber security, hardware, and network fields.



**Jesus J. Santana Roman** is a junior student in the Computer Science program at the University of Puerto Rico at Arecibo and in the future, his plan is to pursue a Ph.D. in Robotics. He is the founder of the Robotics Team (UPRA RT) and currently he is the president. As a research student on the **NASA Swarmathon** competition, his task includes troubleshooting of the Nasa Swarmies, learning ROS, the design of a hands-on activity for the outreach and the design of vex Swarmie robots to mimic the NASA Swarmathon robots during the outreach activities. Also, he worked on the

assembly and maintenance of the VEX Swarmie and NASA Swarmathon robots.



**Javier Olmo-Martínez** is a Computer Science senior student from the University of Puerto Rico at Arecibo (UPRA). He has been part of a small team participating on the **NASA Swarmathon** competition, developing efficient search algorithm for autonomous robots using the "Robotic Operating System" (ROS) framework alongside the robotic simulator tool "Gazebo". As part of the "NASA Swarmathon" team, Javier had the following roles assigned: robot assembling, improving the robots searching method, code debugging. He has also been a presenter, providing "Nasa

Swarmathon" outreach material for high school students, motivating them to continue on a STEM career. Recently, Javier was awarded with a scholarship from "Rock Solid Technologies Inc" and will have the opportunity to work with the company as a "Software Engineering trainee" intern next summer.



**Kevin G. Rolón Domena** is a senior student in the computer science program at the University of Puerto Rico at Arecibo. He's a research student under the mentorship of Dr. Eliana Valenzuela Andrade. His work has consisted on participating in the **NASA Swarmathon** project. Kevin, along with a team of students was responsible for implementing the Artificial Bee Colony Algorithm on the Virtual Competition for Swarmathon's first year. As part of his duties, Kevin has also done outreach for Middle and High School students where he has introduced the students to the NASA Swarmathon and to basic computer science

concepts.



**Jose Peña-Perez** is a senior Computer Science student from University of Puerto Rico at Arecibo (UPRA) and also member of the honor roll book. Since 2016 he joined the "Robotics Development Laboratory" (RoDeL) workforce, where he has been working for 3 consecutive semesters in swarm robotics, inspired in the natural behavior of Bees, and Fireflies among others. Currently, he is participating for the second time, in the **NASA Swarmathon**, where he is not only in part charge on the research and development of searching algorithms, but also he took part in the assembly

and test of the NASA Swarmathon robots.



**Genesis Rosado-Martinez** is a junior at University of Puerto Rico at Arecibo studying computer science. She started doing research as a high school student in the computer science and engineer field at University of Puerto Rico at Mayagüez. She has accomplished three internships, two at North Carolina State University and one at College of Staten Island, New York. Currently, she is part of the NASA Swarmathon project with the goal to improve space exploration applying heuristic algorithms. Her tasks as part of this project was to assembly and do troubleshooting to the NASA

rovers. Additionally, she and other students have developed outreach programs to help student to get into STEM careers by providing workshops about robotics and programming. In the future, she would like to attend graduate school focusing on either robot-human interaction, cyber security, networks, database or education fields.