SERGIO E. GARCÍA-VERGARA

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SUMMARY

My area of expertise lies in the field of robotics, with more than 14 years of experience in algorithm development for autonomous robotic systems, computer vision, software engineering, AI/ML, and human-robot interaction.

I also have 5 years of experience building an early-stage tech startup from scratch.

EDUCATION

Georgia Institute of Technology **Atlanta, GA**
Ph.D. in Electrical and Computer Engineering May 2017
Dissertation: *Coupling of an Objective and Quantifiable Methodology for Assessing Upper-body Movements with VR Gaming Platforms*

Georgia Institute of Technology **Atlanta, GA**
MS in Electrical and Computer Engineering May 2014
Minor: *Computer Science*

University of Puerto Rico at Mayagüez **Mayagüez, PR**
BS in Electrical Engineering June 2011

SKILLS

Programming Languages	Python, C++, Node.js, Java, Matlab
Software Frameworks	ROS & ROS 2, TensorFlow, PyTorch, YoloV11, CVAT, FiftyOne
Tools	Docker, CMake, Git, Cygwin, Bash, LaTeX, Emacs
Robotic Platforms	MEAU RV-8CRL, UR3e/5e, UFactory xarm6, ClearPath AMRs, DARwin-OP, DJI drones
Languages	Fully proficient in English and Spanish. (Basic knowledge in German).

WORK EXPERIENCE

CTO & Co-founder October 2020 - present
RIF Robotics | Atlanta, GA

- Developed a system to autonomously validate and assemble surgical trays in hospital sterile processing departments and off-site distribution centers to reduce errors and surgery delays, reduce the risk of patient infection, and increase throughput without compromising quality.
- Responsible for technical development, field deployment, fundraising, proposal writing, and customer interfacing.

Robotics Consultant July 2023 - June 2024
WDDLY Associates Corp. | Atlanta, GA

- Provided expert guidance in path planning and software development for the startup's UR3e robotic manipulator, aimed to automating the cutting of chickens.

- Successfully integrated the MoveIt motion planning framework for ROS 2 into the startup's autonomy architecture to generate robust and dynamic trajectories for their robotic manipulator.
- Successfully led the migration of WDDLY's autonomy architecture from ROS to ROS 2, enhancing system reliability, scalability, and compatibility with modern robotic frameworks.

Robotics Consultant February 2021 - October 2022
Greenzie | Atlanta, GA

- Provided freelance consulting services to the development team towards enhancing the autonomy architecture software of their autonomous lawnmowers.
- Tasks included: improved pipeline for obstacle detection and avoidance, improved navigation solutions, and research updating autonomy architecture from ROS to ROS 2.

Research Engineer II January 2017 - October 2020
Georgia Tech Research Institute | Atlanta, GA *Supervisor: Dr. Charles Pippin*

- Was the autonomy lead, and then project director, for a wide variety of DoD-sponsored projects. My team was constantly highly commended by the sponsors because of our problem solving skills and constant outstanding performance during demo days.
- Leveraged ROS to develop and implement algorithms for collaborative autonomous systems including, but not limited to, task allocation, path planning, and computer vision.
- Responsibilities included software and algorithm development, field testing autonomous systems, proposal creation, technical reporting, customer interfacing, and project management.

Graduate Research Assistant May 2012 - December 2016
Georgia Tech HumAnS Lab | Atlanta, GA *Supervisor: Dr. Ayanna M. Howard*

- As part of my PhD thesis, I implemented markerless motion tracking algorithms and developed an objective and quantifiable methodology to evaluate the kinematic performance of individuals who have some form of motor skills disorder.
- Developed a pattern recognition algorithm to enable the automatic adaptation of our system's settings as a function of the users' kinematic performance towards optimizing the user's physical therapy intervention protocol.

DISSERTATION

S. García-Vergara, "Coupling of an objective and quantifiable methodology for assessing upper-body movements with virtual reality gaming platforms," Georgia Institute of Technology, 2017

Visit *www.sergiogarciavergara.com/pages/publications* for a full list of published works.

PATENTS

Patents

1. R.E. Torres-Muñiz, **S.E. García-Vergara**, B.A. Llorens-Bonilla, D. Sánchez-Cordero, and M. Lizama, "Switch-Actuated Joystick for Power Wheelchairs", U.S. Patent 8 622 166 B1, January 7, 2014.

Developed a switch-actuated adapter for joystick controlled wheelchairs such that individuals with limited mobility can continue making use of their chairs and avoid spending money on new ones.