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, collaborative systems, computer vision, software engineering, AI/ML, and human-robot interaction.

Over the last 5 years I have also gained invaluable experience building an early-stage deep tech startup from the ground up. As one of three co-founders and CTO, I've been responsible for advancing the startup's technology, fundraising, sales, and negotiating partnerships with industry leaders.

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, GCP Compute Engine, Git, Bash, LaTeX
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

- Developing technology to automate the processing of surgical instruments 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.
- 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 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 their 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 project director and autonomy lead for a wide variety of DoD-sponsored projects. My team was constantly highly commended by the sponsors because of our problem solving skills and 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. C. Farill, K. DeMarco, and **S. García-Vergara**, "Robotic end-effector with Secondary Gripper Mechanism", USPTO application number 63/592,191, October 22, 2023.
2. 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.