

SERGIO E. GARCÍA-VERGARA

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SUMMARY

My area of expertise lies in the field of robotics, with more than 11 years of experience in algorithm development for autonomous robotic systems, computer vision, software engineering, machine learning, and human-robot interaction.

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, C++, C#, Java, Matlab
Software Frameworks	ROS & ROS 2, TensorFlow, PyTorch, YoloV5, CVAT, FiftyOne
Tools	Docker, CMake, Git, Cygwin, Bash, L ^A T _E X, Emacs
Robotic Platforms	Universal Robots Arms, Dingo, DARwin-OP, Pioneer 3-AT BlueEagle, DJI S1000
Languages	Fully proficient in English and Spanish. (Basic knowledge in German).

WORK EXPERIENCE

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

- Developing a system to autonomously inspect surgical instruments and assemble surgical trays to help hospitals reduce patient infections and operating room delays with robotics, artificial intelligence, and predictive analytics.
- Responsible for technical development, fundraising, proposal writing, and customer interfacing.

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

Georgia Tech Research Institute | Atlanta, GA

January 2017 - October 2020

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

Georgia Tech HumAnS Lab | Atlanta, GA

May 2012 - December 2016

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.

SELECTED PUBLICATIONS

Journal Publications and Book Chapters

1. Y.P. Chen, **S. García-Vergara**, and A.M. Howard, "Effect of feedback from a socially interactive humanoid robot on reaching kinematics in children with and without cerebral palsy: a pilot study," *Developmental Neurorehabilitation*, Vol. 21, No. 8, pp. 490-496, 2018.
2. **S. García-Vergara**, L. Brown, H.W. Park, and A.M. Howard, "Engaging children in play therapy: The coupling of virtual reality games with social robotics," *Technologies of Inclusive Well-Being*, Springer Berlin Heidelberg, pp. 139-163, 2014.

Refereed Conference Publications

1. **S. García-Vergara**, L. Brown, Y.P. Chen, and A.M. Howard, "Increasing the Efficacy of Rehabilitation Protocols for Children via a Robotic Playmate Providing Real-time Corrective Feedback," *IEEE Conference on Robot and Human Interactive Communication (Ro-Man)*, pp. 700-705, 2016.
2. **S. García-Vergara**, M.M. Serrano, Y.P. Chen, and A.M. Howard, "Developing a Baseline for Upper-body Motor Skill Assessment Using a Robotic Kinematic Model," *IEEE Conference on Robot and Human Interactive Communication (Ro-Man)*, pp. 911-916, 2014.

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.