

# SERGIO E. GARCÍA-VERGARA

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## SUMMARY

- More than 11 years of experience in algorithm development for autonomous robotic systems, software engineering, pattern recognition and machine learning, and human-robot interaction.
- Extensive experience conducting system field tests and user studies, including experiment design and data analysis.

## EDUCATION

<b>Georgia Institute of Technology</b>	<b>Atlanta, GA</b>
<i>Ph.D. in Electrical and Computer Engineering</i>	May 2017
Dissertation: <i>Coupling of an Objective and Quantifiable Methodology for Assessing Upper-body Movements with VR Gaming Platforms</i>	
<b>Georgia Institute of Technology</b>	<b>Atlanta, GA</b>
<i>MS in Electrical and Computer Engineering</i>	May 2014
Minor: <i>Computer Science</i>	
<b>University of Puerto Rico at Mayagüez</b>	<b>Mayagüez, PR</b>
<i>BS in Electrical Engineering</i>	June 2011

## SKILLS

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

## WORK EXPERIENCE

<b>CTO &amp; Co-founder</b>	October 2020 - present
<i>RIF Robotics   Atlanta, GA</i>	
<ul style="list-style-type: none"> <li>• 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.</li> <li>• Responsible for technical development, fundraising, proposal writing, and customer interfacing.</li> </ul>	
<b>Robotics Consultant</b>	February 2021 - October 2022
<i>Greenzie   Atlanta, GA</i>	
<ul style="list-style-type: none"> <li>• Provided freelance consulting services to the development team towards enhancing the autonomy architecture software of their autonomous lawnmowers.</li> <li>• Tasks included improved pipeline for obstacle detection and avoidance, improved navigation solutions, and research updating autonomy architecture from ROS to ROS 2.</li> </ul>	

## Research Engineer II

Georgia Tech Research Institute | Atlanta, GA

January 2017 - October 2020

Supervisor: Dr. Charles Pippin

- Developed algorithms for collaborative autonomous systems including, but not limited to, task allocation, path planning, and computer vision.
- Helped develop the lab's autonomy architecture software and build system.
- 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

- Developed an interactive virtual reality gaming system for rehabilitation in the home environment.
- Developed an objective and quantifiable methodology for evaluating the kinematic performance of individuals who have some form of motor skills disorder.
- Developed a pattern recognition algorithm to determine the level of the user's kinematic performance such that the virtual reality platform can autonomously adapt to the user's needs.

## PUBLICATIONS

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### 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

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### 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.