# SERGIO E. GARCÍA-VERGARA

✉ 2799 White Oak Ln •Decatur, GA 30032
☎ Cell: (787) 383 - 0475
e✉ sergiodotgarcia@gmail.com •github.com/sgarciav

## 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

**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

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|---|---|
| **Programming Languages** | Python, C, C++, C#, Java |
| **Engineering Software** | ROS1 & ROS2, Matlab, Simulink, LabView |
| **Operating Systems** | Linux, Windows |
| **Tools** | Docker, CMake, Git, Cygwin, Bash, LaTeX, Emacs |
| **Robotic Platforms** | 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 Corp. | 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 ROS1 to ROS2.

**Research Engineer II** January 2017 - October 2020
*Georgia Tech Research Institute | Atlanta, GA* *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** May 2012 - December 2016
*Georgia Tech HumAnS Lab | Atlanta, GA* *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

### 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 Heildelberg, 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.