SERGIO E. GARCÍA-VERGARA

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RESEARCH INTERESTS

Autonomous robotic systems, systems and controls, healthcare robotics, assistive technology, human-robot interaction, pattern recognition, and machine learning.

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
Engineering Software	ROS1 & ROS2, Matlab, Visual Studio, LabView, Simulink, Eclipse
Operating Systems	Linux (Ubuntu), Windows
Tools	Docker, LaTeX, Emacs, Git, Cygwin. CMake, Bash
Robotic Platforms	DARwin-OP, AmigoBot, 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 robust autonomy architecture to help with hospital logistics.
- Working directly with hospital staff to identify problems that can be solved with robotics.

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 algorithm development, software development, 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.

Graduate Research Assistant August 2011 - May 2012
Georgia Tech MRL Lab | Atlanta, GA *Supervisor: Dr. Ronald C. Arkin*

- Implemented the architecture and support for knowledge sharing across heterogeneous robotic agents as part of the MAST (Micro Autonomous Systems Technology) project.
- Designed the conceptual spaces for the different robotic platforms based on their respective sensors as a base for the communication and interpretation of the acquired data (i.e. vision, laser range finder, thermal, etc).

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 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.
3. R.C. Arkin, **S. García-Vergara**, and S.G. Lee, "Architectural Design and Support for Knowledge Sharing Across Heterogeneous MAST systems," *SPIE Conference*, pp. 84070C, 2012.

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.