

About Me

Basically, this webpage is the culmination of extensive work, research, and passion that I have gained throughout my life in the fields of robotics. The majority of my studies have focused on: designing, modeling, programming, assembling parts, and assisting with mechanical and electronic maintenance of robots. These various experiences piqued my curiosity and led me to follow a career in robotics, where I would be able to apply the knowledge I achieved in the areas of Mechanical, Electrical and Computer Engineering.

My path towards a career in robotics began when I was younger, as I have always had a passion for and have been adept in Math and Science. These interests led me to enroll into SENAI, a technical school in Sao Paulo, Brazil, when I was 15 years old. This is where my first contact with the field of engineering occurred. During my two years studying at [SENAI](#), I became equipped with extensive machining and fabrication experience. Specifically, I learned how to manufacture high precision “prototypes” using conventional and Computer Numeric Control (CNC) machine tools. This knowledge has helped greatly, as I put it to use presently in my projects, and I am confident that it will help me with future projects. Upon concluding this course I was sure that I wanted to focus my career in a branch of engineering.

As my interest in engineering developed from my initial experiences, I was convinced that I wanted to build my own robot. However, I knew that I would have to learn to develop the electronic circuit, and program the robot to accomplish the desired tasks, which ultimately led me to join the [FEI University](#) and majored in Automation and Control Engineering, a 5-year program. As a result of my hard work throughout my college years, I graduated with honors and received the Outstanding Bachelor Award. This award is given to the best student of each major in the graduating class. During my second year of college, I was intensively engaged in tutoring programs as a teacher’s assistant in Calculus II and Physics I, where I became passionate about mentoring and helping others to learn. Concurrently, that year I joined the [Artificial Intelligence Laboratory](#) and later became the lead programmer. The main goal of this project was to develop robots able to play soccer in national and international competitions. For the majority of my time during this research, I developed the strategy that conducted the robots during the game. Working on this project, enabled me to learn and specialize in the object-oriented programming and data structure in C/C++ language. I applied this knowledge I had gained with my previous experiences to improve the [pass system of the ball](#), choosing the intensity of force to kick the ball and selecting the best player to pass the ball using probabilistic concepts. The fruits of my labor were rewarding in that I gained valuable experience in robotics, and I am proud to say that we won three competitions during my time with the team.

While in my fourth year of college, I had the opportunity to live and study in the United States at Western Michigan University. During my time at Western Michigan University I took English classes and also several classes related to my engineering program in Brazil. I came across the opportunity to be a part of an [Independent Study](#) with Dr. Durbin, where I used RaspberryPI to control the fan motors of an Air Hockey Table, to display the time, score and alerts on the computer screen; as well as adding sensors to detect the puck. I also obtained excellent experience programming in the Python language, which was necessary to program the RaspberryPI. Even though this work was not related to Mechanical Engineering, the fact that I had to learn to a great extent about this language benefited me, for I could apply it to my current projects. Also, I found that Dr. Antonie Van Der Bogert at Cleveland State University and his research group extensively used this language to study multibody dynamics.

Upon my return to Brazil, I joined in a research with Professor Marko Ackermann (a post doctoral fellow at the Department of Biomedical Engineering in Cleveland Clinic). The main goal of the research is to [model and simulate a power-assisted wheelchair](#) to accomplish the maneuver called a “wheelie”, where the wheelchair employed is to overcome obstacles and descend ramps, by controlling its balance under two rear wheels. I was able to apply the copious amount of knowledge I achieved during my time in Technical School and other experiences that I gained from the Artificial Intelligence Laboratory. I performed experiments to estimate parameters of a wheelchair, modeled and simulated the “wheelie” and developed a controller capable of raising the wheelchair. Finally, for my Honors Thesis/Senior Project, I built a [Power-Assisted Wheelchair controlled by EMG signals](#). These researches awakened in me a passion, and I found myself confident that I would like to continue in research that focuses to better the lives of the disabled.

Nowadays, I am a PhD student at Cleveland State University ...

Erivelton Gualter