Yuri G Rocha

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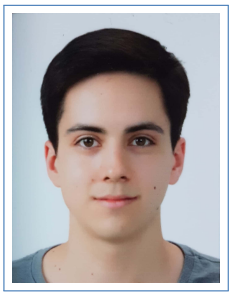

Education

2018–2020 **M.Sc., Electrical and Computer Engineering**, *Sungkyunkwan University*.
Research: Robot Mental Simulation for Autonomous Learning and Planning
Courses: Neural Networks, Machine Learning, Robotics, Linear Systems
Advisor: Prof. Tae-Yong Kuc *GPA:* 4.5/4.5

2010–2016 **B.Sc., Control and Automation Engineering**, *University of Brasilia*.
Research: Methods for visual communication and cooperative control between humanoid robots
Courses: Computer Vision, Digital Control, Object-Oriented Programming, Computer Architecture
Advisor: Prof. Mariana Costa Bernardes *GPA:* 4.1/5.0

2014–2015 **Exchange B.Sc., Computer Engineering**, *Sungkyunkwan University*.
Courses: System Programming, Computer Graphics, Microprocessors *GPA:* 4.1/4.5

Professional Experience

Vocational

2016–2017 **Developer**, *Moringa Digital*, Brasilia, Brazil.
Function:
- Development of a web service in NodeJS to automate the integration between the database of the company and client databases;
- Back-end development of several websites

Acquired Knowledge:
- Javascript, NodeJS, MySQL, ASP and HTML.

Jul. 2015 **Intern**, *Hyundai Motor Company*, Namyang, South Korea.
Function:
- Analyzing the car assembly line and proposing a new automating process.

Acquired Knowledge:
- Car assembly process and Methods of research and development of new products;

Miscelaneous

2015–2016 **Team Leader**, *UnBeatables – Humanoid Robot Soccer*, Brasilia, Brazil.
- Team leader for the UnBeatables team, that participated in the Robocup competition in the context of the Standard Platform League - DropIn. The main responsibilities were to coordinate the activities of the team, develop code for participation in competitions (Robocup and LARC) and administrative tasks;
- The code development was in C++ and Python. The main tasks that were performed were develop the code architecture with different threads running in parallel, TCP communication and integration of a new humanoid motion algorithm;

Research Experience

2018–2020 **Control and Robotics Lab**, *Graduate Student Researcher*, Sungkyunkwan University.

- Took part on the development of a Semantic Knowledge Framework for environmental and internal representation;
- Created a automatic mental simulation system, allowing robots to simulate himself and the environment without human aid. Done using the ROS system and Gazebo Simulator.
- Developed Reinforcement Learning algorithms for navigation and Deep Transfer Learning algorithms.

2014–2016 **Laboratory of Robotics and Automation**, *Undergraduate Student Researcher*, University of Brasilia.

- Mathematical definition for bi-manual manipulation by using the dual quaternion algebra on the NAO robot, mainly using the dual cooperative task-space;
- Implementation of control strategies on NAO platform and on Simulated environment V-Rep. In this context we also studied strategies for singulaty avoidance and joint limit avoidance. The project was done using the ROS system.
- Development of algorithms for robot vision, implemented on NAO with OpenCV.

Social Engineering Activities

2015–2016 **Team Leader**, *UnBeatables – Humanoid Robot Soccer: Social Activities*, Brasilia, Brazil.

- Went to schools, children hospitals and science fairs to showcase our robot and to inspire kids following STEM careers in their future.

2013–2014 **Voluntary Teacher**, *Electron Project*, Brasilia, Brazil.

- Gave lessons at Electronics Laboratory for high school students attending public schools of Federal District, encouraging them to learn about and apply for Engineering Programs at University;

Publications

Peer-Reviewed Conferences

Y. G. Rocha and T. Y. Kuc. Mental simulation for autonomous learning and planning based on triplet ontological semantic model. *CEUR Workshop Proceedings*, 2487:65–73, 2019.

S.-H. Joo, S. Manzoor, Y. G. Rocha, H.-U. Lee, and T.-Y. Kuc. A Realtime Autonomous Robot Navigation Framework for Human like High-level Interaction and Task Planning in Global Dynamic Environment. 2019, 1905.12942.

C. M. de Farias*, Y. G. Rocha*, L. F. C. Figueredo, and M. C. Bernardes. Design of singularity-robust and task-priority primitive controllers for cooperative manipulation using dual quaternion representation. In *2017 IEEE Conference on Control Technology and Applications (CCTA)*, pages 740–745. IEEE, 2017.

Grants and Awards

2017 **Korean Government Scholarship Program (KGSP) for Graduate Students Grantee**.
Three years scholarship as a Graduate Student at Sungkyunkwan University - Granted by the National Institute for International Education (NIIED)

2014 **Science without Borders Scholarship Grantee**.
One year scholarship as a exchange student at Sungkyunkwan University - Granted by the National Council for Scientific and Technological Development (CnPQ)

Languages

Portuguese **Native**

English **Fluent** *TOEFL IBT Score: 114/120*

Korean **Advanced** *TOPIK 5*

November 21, 2019