Yuri G Rocha

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Education

Sep. 2018 – Aug. 2020 (expected) **M.Sc., Electrical and Computer Engineering**, *Sungkyunkwan University*, Suwon, South Korea.
- *Research:* Robot Mental Simulation for Autonomous Learning and Planning
- *Courses:* Neural Networks, Machine Learning, Robotics, Linear Systems, Advanced Probability and Random Processes
- *Advisor:* Prof. Tae-Yong Kuc
- *GPA:* 4.4/4.5

Mar. 2011 – Dec. 2016 **B.Sc., Control and Automation Engineering**, *University of Brasilia*, Brasilia, Brazil.
- *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

Sep. 2014 – Aug. 2015 **Exchange B.Sc., Computer Engineering**, *Sungkyunkwan University*, Suwon, South Korea.
- *Courses:* System Programming, Computer Graphics, Microprocessors
- *GPA:* 4.1/4.5

Professional Experience

Vocational

Aug. 2016 – Jul. 2017 **Developer**, *Moringa Digital*, Brasilia, Brazil.

Function:
- Developed a web service in NodeJS to automate the integration between the database of the company and client databases. Worked directly with client's technology team to set goals and deadlines;
- Back-end development of several websites

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

Jul. 2015 **Intern**, *Hyundai Motor Company*, Namyang, South Korea.

Function:
- Analyzed the car assembly line and proposed a new automating process.

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

Miscelaneous

Aug. 2015 – Dec. 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. Coordinated the activities of the team, developed code for participation in competitions (Robocup and LARC) and performed administrative tasks;
- Developed the code architecture with different threads running in parallel, TCP communication and integration of a new humanoid motion algorithm. The code development was done in C++ and Python;

Research Experience

Sep. 2018 – Present
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 an 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 hybrid planning methods.

Jan. 2014 – Dec. 2016
Laboratory of Robotics and Automation, *Undergraduate Student Researcher*, University of Brasilia.
- Derived the mathematical definition for bi-manual manipulation by using the dual quaternion algebra on the NAO robot, mainly using the dual cooperative task-space;
- Implemented control strategies on NAO platform and on Simulated environment V-Rep. In this context, also studied strategies for singulaty avoidance and joint limit avoidance. The project was done using the ROS system.
- Developed algorithms for robot vision, implemented on NAO with OpenCV.

Social Engineering Activities

Aug. 2015 – Dec. 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.

Jan. 2013 – Aug. 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.

Y. G. Rocha, S.-H. Joo, E.-J. Kim, and T.-Y. Kuc. Automatic generation of a simulated robot from an ontology-based semantic description. *제어로봇시스템학회 국제학술대회 논문집*, pages 1340–1343, 2019.

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

Dec. 2019
Award for Academic Achievement as a Korean Government Scholarship Student.
Received in recognition of academic achievement - Granted by the Korean Ministry of Education

Sep. 2017 – Aug. 2020
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)

Languages

Portuguese	**Native**	
English	**Fluent**	*TOEFL IBT Score: 114/120*
Korean	**Advanced**	*TOPIK 5*

February 15, 2020