Santiago Price Torrendell | Mechanical Engineer

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Academic profile:

'Mechanical Engineer with a deep interest in materializing scientific knowledge into technological applications'

My highest professional aspiration is to create value by generating creative solutions for complex and meaningful engineering problems. I am a dedicated and responsible person with a strong commitment to continuous learning and professional development.

Core skills:

. Mechanical design
. Additive manufacturing techniques
. Material Science
. Control of Dynamical Systems .

Education and qualifications:

PhDEng: **Assistive robotics**
University of Tsukuba, Systems and Information Engineering Graduate School, Artificial Intelligence Laboratory (April 2022-April 2025**):**
Topic: "Design and Fabrication of a Neck Exoskeleton"

MEng: **Control and robotics**
Instituto Balseiro, Universidad Nacional de Cuyo (2020)
Thesis: " Development of bioinspired systems actuated by shape memory alloys"
Project: Development of a robotic hand. Continuation of undergraduate project.
Modules: Digital signals laboratory, Deep learning and neural network, Digital control of dynamical systems, Object-oriented programming in C++

BEng: **Mechanical Engineering**
Instituto Balseiro, Universidad Nacional de Cuyo (2019)
Thesis: "Application of shape memory alloys in bioinspired systems"
Modules: Matter and Energy Transfer, Fluid Mechanics, Solid Mechanics, Numerical Methods for Engineering, C Programming

Working Experience:

Research Assistant: **HCPS Fusion Systemization Basic Technology Development**
University of Tsukuba (July 2024- October 2024)
The role was related to the deployment of a system to autonomously drive wheelchairs based on odometry and LiDAR sensor scans. The software implementation is based on ROS, combined and supported by Docker.

Teaching Assistant: **Mechatronics Basics and Applications**
University of Tsukuba (August 2023-April 2024)
The role involved supporting undergraduate students in developing mechatronics systems involving sensors, microcontrollers, and actuators.

Scholarships:

- 2016-2021: “Scholarship from CNEA (National Commission of Atomic Energy) to study in Instituto Balseiro”
- 2021-2025: “Monbukagakusho Scholarship for pursuing a 3 year PhD program in Japan”

Additional information:

- 6 years of experience programming Arduino and ST board
- 10 years of experience in Cad programs: Autodesk Inventor®/SolidWorks® and CURA®
- 5 years of experience in programming: C, C++, Python, and MATLAB®
- Idioms: Spanish (native) and English (Professional Working Proficiency)

References:

- Kenji Suzuki (PhD advisor, CV: https://www.ai.iit.tsukuba.ac.jp/kenji/index.html): kenji@ieee.org
- Hugo Ramón Soul (advisor of master and undergraduate thesis): hugo.soul@gmail.com
- Graciela Bertolino (co-advisor of undergraduate thesis): grabertolino@gmail.com

Publications :

- S. P. Torrendell, H. Kadone, M. Hassan, Y. Chen, K. Miura and K. Suzuki, "*A Neck Orthosis With Multi-Directional Variable Stiffness for Persons With Dropped Head Syndrome,*" in IEEE Robotics and Automation Letters, doi: 10.1109/LRA.2024.3402180.
- S. P. Torrendell, Y. Chen, H. Kadone, M. Hassan and K. Suzuki, *"A Neck Orthosis with Multi-Directional Stiffness for Resistance Training,"* (preprint) 2024 IEEE International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)
- E. F. Pedrazzini, S. P. Torrendell, H. Kadone. M. Hassan and K. Suzuki, *"An EMG-Modulated Asymmetric Arm Bike for Stroke Rehabilitation"(*preprint) 2024 IEEE International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)
- S. P. Torrendell, Y. Chen, H. Kadone, M. Hassan and K. Suzuki, *"Design of a Multi-Degree-of-Freedom Elastic Neck Exoskeleton for Persons with Dropped Head Syndrome,"* 2023 IEEE International Conference on Soft Robotics (RoboSoft) doi: 10.1109/RoboSoft55895.2023.10122051.