Alessandro Pistone

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WORK EXPERIENCE

January 2024 – present

Control System Engineer

Konecranes Port Solutions Italy, Genoa, Italy

Design and development of electrical and hydraulic control systems for ReachStacker, Forklift, and Empty Container Handler

June 2017 – December 2023

Postdoctoral Researcher

Istituto Italiano di Tecnologia (IIT), Advanced Robotics (ADVR) research line, Genoa, Italy

Development of advanced robotics systems in R&D projects financed by industrial partners. As member of the Robotics Automation INspection (RAIN) laboratory, for each project my activities are described as follows.

2022–2023 - INAIL project CdA - Mitigation of falls from a height:
- development of control and data acquisition software (LabVIEW, MATLAB, C/C++)
- test in laboratory using National Instruments hardware and load cells
- reports of the above-mentioned activities
- customer relations and activities management

2019–2021 - Ansaldo Energia project C3DO - Inspection robot for big machines:
- development of robot control, data acquisition and data analysis software (LabVIEW, MATLAB, C/C++)
- test in laboratory and real environment (assembly workshop and power plants) using National Instruments hardware
- reports of the above-mentioned activities
- customer relations and activities management

2018–2019 - Luxottica project SmartVision - Automated quality control system:
- Universal Robots hardware installation
- development of preliminary software (LabVIEW, URScript)

2017–2019 - Ansaldo Energia project IDLIR - Crawler for power generator inspection:
- development of robot control, data acquisition and data analysis software (LabVIEW, C/C++)
- test in laboratory and real environment (assembly workshop and power plants) using National Instruments hardware
- reports of the above-mentioned activities

Co-teacher of the PhD course "Data Acquisition and Data Analysis Methods" offered by Department of Informatics, Bioengineering, Robotics and Systems Engineering (DIBRIS) since XXXIII PhD cycle (academic year 2017/18) at UniGE

February 2017 – May 2017

Tutor

Centro Studi Piazza Colombo, Piazza Colombo 3, Genoa, Italy

Physics and Maths tutor
- individual lessons
- recovery courses

August 2007 – September 2007	## Apprentice
	Elettromeccanica Arecco, vico Saponiera, 6/r, Genoa, Italy
	Good manual dexterity acquired through apprentice experience during summer period in electric engine mounting and dismounting

EDUCATION AND TRAINING

Genuary 2014 – April 2017	## PhD in Physics

Università Degli Studi di Genova (UniGE), Genoa, Italy
Istituto Nazionale Fisica Nucleare (INFN) Sezione Genova, Genoa, Italy
European Organization for Nuclear Research (CERN), Geneva, Switzerland

Thesis's title "The upgrade of RICH detectors for the LHCb experiment and a study of charmless B decays"

My work focused on data analysis and hardware implementation within the research and upgrade programs of the LHCb experiment at CERN and included the following activities:
- software development (C++, Python) within the LHCb data analysis program and study of advanced statistical methods (MVA)
- hardware development within the RICH upgrade program, experimental setup mounting for beam tests at SPS (CERN), development of the software to analyse data (C++), control the detector and monitor temperatures (WinCC OA)
- laboratory tests, thermal and electrical measurements (FLIR, CAEN) at Physics Department in Genoa
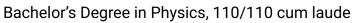
October 2011 – July 2013

Master's Degree in Physics, 110/110 cum laude

Università Degli Studi di Genova (UniGE), Genoa, Italy
Istituto Nazionale Fisica Nucleare (INFN) Sezione di Genova, Genoa, Italy

Thesis's title "Measurement of CP violation for three-body B mesons decays at LHCb"

The MSc thesis focused on data analysis within the research program of the LHCb experiment at CERN

October 2008 – September 2011

Bachelor's Degree in Physics, 110/110 cum laude

Università Degli Studi di Genova (UniGE), Genoa, Italy

Thesis's title "Analisi dell'instrumentation amplifier e suo uso in misure di Fisica"

September 2003 – June 2008

Scientific High School's Degree, 100/100

Liceo Scientifico E. Fermi, Genoa, Italy

Piano Nazionale Informatica (PNI)

ATTENDED SCHOOLS

Machine Learning Crash Course, 2019, June 17 – 21, Genoa, Italy

XXVII Seminario Nazionale di Fisica Nucleare e Subnucleare "Francesco Romano", 2015, June 4 – 11 Otranto, Italy

VI Scuola Nazionale "Rivelatori ed Elettronica per Fisica delle Alte Energie, Astrofisica, Applicazioni Spaziali e Fisica Medica", 2015, March 23 – 27 Laboratori Nazionali INFN, Legnaro, Italy

WinCC-OA and JCOP Framework - 5 days hands-on course, 2015, March 2 – 6 CERN, Geneva, Switzerland

Società Italiana di Spettroscopia Neutronica (SISN) summer school, 2012, June 23 – July 3, Institute Laue-Langevin (ILL), Grenoble, France

PUBLICATIONS AND PROCEEDINGS

"Design of a torsional stiffener for a cable-driven hyper-redundant robot composed of gear transmission joints." The International Journal of Advanced Manufacturing Technology (2024)

"Modelling and control of manipulators for inspection and maintenance in challenging environments: A literature review." Annual Reviews in Control 57 (2024)

"Lyapunov stability of cable-driven manipulators with synthetic fibre cables regulated by non-linear full-state feedback controller" ISA transactions (2023)

"A Dual Forward−Backward Algorithm to Solve Convex Model Predictive Control for Obstacle Avoidance in a Logistics Scenario" Electronics 2023, 12(3), 622

"Performance of the LHCb RICH detectors during LHC Run 2" Journal of Instrumentation, Volume 17. July 2022

"Design and Analysis of a Fully Actuated Cable-Driven Joint for Hyper-Redundant Robots With Optimal Cable Routing" ASME. J. Mechanisms Robotics. April 2022

"Design of a Novel Long-Reach Cable-Driven Hyper-Redundant Snake-like Manipulator for Inspection and Maintenance" Appl. Sci. 2022, 12, 3348

"Static Elasticity Compensation via Recursive Artificial Neural Network for Long-Reach Cable-Driven Hyper-Redundant Manipulators" 2021 20th International Conference on Advanced Robotics (ICAR)

"Design and Validation of a Novel Turbogenerator's Robotized Inspection System", ASME Turbo Expo 2021: Turbomachinery Technical Conference and Exposition

"Modeling cable-driven joint dynamics and friction: A bond-graph approach", 2020 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)

"Rivet inspection with multi-sensor robotic system", INES 2020 - IEEE 24th International Conference on Intelligent Engineering Systems

"Reconfigurable inspection robot for industrial applications", Procedia Manufacturing Volume 38, 2019, Pages 597-604

"Dexterous Gripper for In-Hand Manipulation with Embedded Object Localization Algorithm", Procedia Manufacturing Volume 38, 2019, Pages 1354-1361

"Novel Integrated Robotic System for Tiny Duct Inspection", Procedia Manufacturing Volume 17, 2018, Pages 342-349

"Observation of the decay $B_s^0 \to \eta_c \phi$ and evidence for $B_s^0 \to \eta_c \pi^+ \pi^-$", Journal of High Energy Physics 1707 (2017) 021

"RICH upgrade in LHCb experiment", Il Nuovo Cimento 40 C (2017) 77

"Test of the photon detection system for the LHCb RICH Upgrade in a charged particle beam", Journal of Instrumentation, Volume 12, January 2017

"RICH upgrade: Current status and future perspectives", Il Nuovo Cimento 39 C (2016) 262

Many other publications come from my past research activity within the LHCb collaboration that led me to cooperate together with several institutions and research laboratories

SKILLS

Languages	Italian – Mother tongue
	English – Very good command (B2) • 2007 - PET (Preliminary English Test): Passed • 2012 - FCE (First Certificate in English): Grade C
Social skills and competences	Good interpersonal skills Attitude at teamwork and social interaction (multicultural and multilingual environment) Ability to work independently
Organisational skills and competences	Good experience in project and team management Good planning skills with great attention to detail and ability to prioritise work Ability to work under stress and problem solving
Technical skills and competences	Extensive laboratory experience in basic electronics and mechanical assembly Ability to understand simple technical drawings and mechanisms operation
Computer skills and competences	Very good command of Windows Very good command of MS Office Very good command of C, C++ Good command of Python Very good command of LaTeX Good command of Linux Very good command of Arduino Very good command of MATLAB Very good command of LabVIEW Good command of WinCC OA Good command of common graphics software (Adobe Photoshop, VSDC editor) Very good command of Internet skills (Edge, Internet Explorer, Chrome, Firefox)
Other skills and competences	Good communication skills gained through teaching to undergraduate and graduate students and during my experience as representative student: • Student representative in several university government organs, such as Academic Senate, Science Faculty Council, Physics Department Council and Physics Course Council (2010-2013) • Doctorate Students' Representative in Physics Department Council (2015-2017) • Didactic Tutor for Chemistry, Physics and Material Science and Engineering courses (2015-2016)

ADDITIONAL INFORMATION

Driving licence	A, B
Hobbies	Cinema and TV-series, music, sci-fi and non-fiction books, travelling
Interests	Astronomy and cosmology, economic policy, energy sector and environmental sustainability, particle physics, robotics, space missions

PERSONAL PRIVACY

I give consent to process my data with the purpose of the recruitment process, in accordance to the Regulation of the European Parliament 679/2016, regarding the protection of natural persons and free movement of such data.