UNIVERSITÀ DEGLI STUDI DI MILANO

TO MAGNIFICO RETTORE OF UNIVERSITA' DEGLI STUDI DI MILANO   ID CODE ___ **6322**_____

I the undersigned asks to participate in the public selection, for qualifications and examinations, for the awarding of a type B fellowship at **Dipartimento di Physics "Aldo Pontremoli"**

Scientist- in – charge: **Prof. Genoni Marco Giovanni**

[Name and surname]

CURRICULUM VITAE

PERSONAL INFORMATION

Surname	Ma
Name	Hailan

PRESENT OCCUPATION

Appointment	Structure
Scholarship holder	University of New South Wales, Canberra

EDUCATION AND TRAINING

Degree	Course of studies	University	year of achievement of the degree
Degree			
Specialization			
PhD	Electronic Engineering	University of New South Wales	March 2024(Expected)
Master	Control Science and Engineering	Nanjing University	2017
Degree of medical specialization			
Degree of European specialization			
Other	Bachelor degree in Automation	Nanjing University	2014

REGISTRATION IN PROFESSIONAL ASSOCIATIONS

Date of registration	Association	City
13/09/2020	Technical Committee on Quantum Cybernetics, IEEE Systems, Man and Cybernetics Society	
28/11/2023	Member of ANZCOP-Australian Australian Institute of Physics (AIP)	

FOREIGN LANGUAGES

Languages	level of knowledge
English	Fluency

AWARDS, ACKNOWLEDGEMENTS, SCHOLARSHIPS

Year	Description of award
2023	Government Award for Outstanding Self-Financed PhD Students
2020	Australian University International Postgraduate Award (UIPA) at UNSW
2016	National Scholarship for master's degree at Nanjing University

TRAINING OR RESEARCH ACTIVITY

description of activity
2023 Graduate Teaching Training Program (GTTP) at UNSW Canberra, 2023
2023 Mental Health First Aid(MHFA), a qualification with 5 years validity, UNSW Canberra, 2023.
2022 Visiting IBM Quantum Hub at University of Melbourne, led by Prof. Lloyd C. L. Hollenberg
2019 Visiting Key Laboratory of Quantum Information at University of Science and Technology of China, led by Prof. Guoyong Xiang
2019-2020 Mentor of an undergraduate student and a post-graduate student for graduation project at Nanjing University.

PROJECT ACTIVITY

Year	Project
2014-2017 & 2020-now	Robust learning control for quantum systems
2022-now	Realizations of quantum compression using quantum autoencoders
2021-now	Neural network-based quantum tomography

PATENTS

Patent

CONGRESSES AND SEMINARS

Date	Title	Place
04/12/2023	Realization of quantum autoencoders using a learning control approach	Canberra, Australia
10/07/2023	Tomography of quantum detectors using neural networks	Yokohama, Japan
15/12/2021	On how neural networks enhance quantum state tomography with limited resources	CDC conference, Online (covid)

PUBLICATIONS

Books
[title, place, publishing house, year …]
[title, place, publishing house, year …]
[title, place, publishing house, year …]

Articles in journals
H. Ma, D. Dong, S. X. Ding, C. Chen. Curriculum-based deep reinforcement learning for quantum control, IEEE Transactions on Neural Networks and Learning Systems, 34(11), 8852-8865, 2023.
H. Ma, C.-J. Huang, C. Chen, D. Dong, Y. Wang, R.-B. Wu, G.-Y. Xiang. On compression rate of quantum autoencoders: Control design, numerical and experimental realization, Automatica, 147, 110659, 2023.
H. Ma, D. Dong, C. Chen. Two-step robust control design of quantum gates via differential evolution, Journal of the Franklin Institute, 360(17), 13972-13993, 2023.
Q. Wei, **H. Ma**, C. Chen, D. Dong. Deep reinforcement learning with quantum-inspired experience replay, IEEE Transactions on Cybernetics, 52(9), 9326–9338, 2022. (Co-first author)
C.-J. Huang, **H. Ma**, Q. Yin, J.-F. Tang, D. Dong, C. Chen, G.-Y. Xiang, G.-C. Guo. Realization of a quantum autoencoder for lossless compression of quantum data, Physical Review A, 102(3), 032412, 2020. (Co-first author)
D. Dong, X. Xing, **H. Ma**, C. Chen, Z. Liu, H. Rabitz. Learning-based quantum robust control: algorithm, applications, and experiments, IEEE Transactions on Cybernetics, 50(8), 3581-3593, 2020.
D. Dong, C.-C. Shu, J. Chen, X. Xing, **H. Ma**, Y. Guo, H. Rabitz. Learning control of quantum systems using frequency-domain optimization algorithms, IEEE Transactions on Control Systems Technology, 29(4), 1791-1798, 2020.
H. Ma, D. Dong, C.-C. Shu, Z. Zhu, C. Chen. Quantum learning control using differential evolution with equally-mixed strategies, Control Theory and Technology, 15, 226-241, 2017.

Congress proceedings
H. Ma, Z. Sun, S. Xiao, D. Dong, I. R. Petersen. Tomography of quantum detectors using neural networks, 62nd IEEE Conference on Decision and Control (CDC), Marina Bay Sands, Singapore, 13-15 December 2023.
H. Ma, S. Kuang, D. Dong. Guided Reward Design in Continuous Reinforcement Learning for Quantum

Control, 2023 IEEE International Conference on Systems, Man, and Cybernetics (SMC), Oahu, Hawaii, 1-4 October 2023.

H. Ma, Z. Sun, S. Xiao, D. Dong, I. R. Petersen. Tomography of quantum detectors using neural networks, 22nd World Congress of the International Federation of Automatic Control (IFAC), Yokohama, Japan, 9-14 July 2023. (Oral presentation)

H. Ma, D. Dong, I. R. Petersen. On how neural networks enhance quantum state tomography with limited resources, 60th IEEE Conference on Decision and Control (CDC), Austin, Texas, USA, 13-17 December 2021. (Oral presentation)

OTHER INFORMATION

Familar with Matlab, Python, C/C++

Declarations given in the present curriculum must be considered released according to art. 46 and 47 of DPR n. 445/2000.

The present curriculum does not contain confidential and legal information according to art. 4, paragraph 1, points d) and e) of D.Lgs. 30.06.2003 n. 196.

Please note that CV WILL BE PUBLISHED on the University website and It is recommended that personal and sensitive data should not be included. This template is realized to satisfy the need of publication without personal and sensitive data.

Please DO NOT SIGN this form.

Place and date: ___Canberra_____, _____25/01/2024_____