POLITECNICO MILANO 1863

PUBLIC SELECTION ESTABLISHED WITH DIRECTOR'S DECREE NO. 2023_PRA_DMEC_4 OF 04/07/2023 PURSUANT TO THE NOTICE PUBLISHED IN THE OFFICIAL GAZETTE NO. 14/07/2023, n. 53 FOR 1 POSITION AS ASSOCIATE PROFESSOR FOR THE COMPETITION SECTOR 09/A2 - APPLIED MECHANICS - SDS ING-IND/13 - APPLIED MECHANICS, PURSUANT TO ART. 18 - LAW 240/2010, AT THE POLITECNICO DI MILANO - DEPARTMENT OF MECHANICAL ENGINEERING (PROCEDURE CODE 2023_PRA_DMEC_4).

FINAL REPORT

The Selection Board, appointed with RD Index No. 2254 ref. No. 41459 of 22 February 2024, composed by the following Professors:

Prof.ssa TOMASINI Gisella Marita - Politecnico di Milano;
Prof. L'AFFLITTO Andrea - Virginia Tech;
Prof. KUOSMANEN Petri – Aalto University,

met on March, 20 at 3 p.m. for the first teleconference meeting.
Each board member was connected from his/her workstation.

At the start of the session the members of the Selection Board named the Chairman and the Secretary of the Selection Board:

GISELLA TOMASINI, ASSOCIATE PROFESSOR at Politecnico di Milano, Chairman;
GISELLA TOMASINI, ASSOCIATE PROFESSOR at Politecnico di Milano, Secretary.

Each member of the board declared not to have conjugal nor family relationship or other degree of kinship or affinity up to the fourth degree, not to be in same-sex civil union (as per art. 1 of Law No. 76 of 20.05.2016) and not to form a cohabiting couple (as per art. 1, paragraphs 37 et seq. of Law No. 76 of 20.05.2016) with the other members of this board and that there were no reasons for abstention pursuant to arts. 51 and 52 of the Civil Procedure Code.

The members of the Selection Board and the Secretary declared, pursuant to art. 35-bis of Legislative Decree 165/2001, not to have criminal convictions, even with non-definitive sentences, for offences provided for in Chapter I, Title II of the second book of the Criminal Code.

The Selection Board established the criteria and the parameters according to which the assessment was carried out, and set the minimum score below which the candidate shall not be included in the ranking of candidates.

On May, 8 at 3 p.m. the Selection Board met for the second teleconference meeting to inspect the list of applicants, who were:

1) Giusti, Andrea
2) Roveda, Loris

Each member of the board declared not to have conjugal nor family relationship or other degree of kinship or affinity up to the fourth degree, not to be in same-sex civil union (as per art. 1 of Law No. 76 of 20.05.2016) and not to form a cohabiting couple (as per art. 1, paragraphs 37 et seq. of Law No. 76 of 20.05.2016) with the candidates and stated that there were no reasons for abstention pursuant to arts. 51 and 52 of the Civil Procedure Code.

Each member of the Selection Board also declared to not be co-author, with one or more candidates, in a percentage exceeding 50%, of the publications attached by them for evaluation purposes.

Pursuant to the examination and after adequate evaluation, the Selection Board assigned a score to each of the established criteria and a judgment to each publication submitted by the candidate; furthermore, the board evaluated the knowledge of the English language.

Therefore the board, considering the sum of the scores given, expressed a collective judgment in relation to the quantity and the quality of publications, evaluating the overall productivity of the applicant, also with regard to his/her period of activity.

The above-mentioned judgments are attached to this report and they are an integral part of it (Attachment No. 1 to this final report).

The Selection Board drew up, according to the majority of its members, a ranking of candidates selected to carry out the scientific/teaching functions for which the selection was called, in a number equal to a maximum of five times the number of positions available in the competition (Attachment No. 2 to this final report).

THE SELECTION BOARD

Prof. ssa TOMASINI Gisella Marita *(Chairman and Secretary)*

Prof. KUOSMANEN Petri *(Member)*

Prof. L'AFFLITTO Andrea *(Member)*

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ATTACHMENT No. 1 to the FINAL REPORT

CRITERIA	Quality of scientific and/or project production, assessed on the basis of criteria and parameters recognized by the international scientific community of reference	Teaching activity at the university level in Italy or abroad	Scientific responsibility for funded research projects	Results obtained in technology transfer in terms of participation in the creation of new enterprises (spin off), development, use and marketing of patents	Total
Giusti Andrea	30,47	20	21	0	71,47
Roveda Loris	38,13	23	25	0	86,13

CANDIDATE: Giusti, Andrea

CURRICULUM:
The candidate holds a Bachelor's degree in Telecommunications Engineering and a Master's degree in Mechatronic Engineering from the University of Trento, and a Ph.D. in Informatics and its Applications from the Technical University of Munich (TUM) in Germany. Since November 2017, he has been working at Fraunhofer Italia Research s.c.a.r.l. (Bolzano), initially as a researcher in the unit "Automation and Mechatronics Engineering", and since November 2020, as the head of the unit "Robotics and Intelligent Systems Engineering". During his Ph.D. in 2016, he completed an internship as a visiting researcher at the Italian Institute of Technology in Genoa (IIT). He has been a co-organizer and invited speaker at several international conferences and has received various international paper awards.

SUBMITTED PUBLICATIONS:

No. of publications	Type/Title of Publication	Judgment
1	On-the-Fly Control Design of Modular Robot Manipulators	Journal paper, 2 authors. The paper exhibits excellent originality, innovativeness, and methodological rigor, as well as excellent scientific relevance of the editorial collocation. The congruence with the scientific sector (SSD ING/IND-13) is good.
2	On the Combined Inverse-Dynamics/Passivity-Based Control of Elastic-Joint Robots	Journal paper, 4 authors. The paper exhibits excellent originality, innovativeness, and methodological rigor, as well as excellent scientific relevance of the editorial collocation. The congruence with the scientific sector (SSD ING/IND-13) is full.
3	Flexible Automation Driven by Demonstration: Leveraging Strategies that Simplify Robotics	Journal paper, 6 authors. The paper exhibits excellent originality, innovativeness, and methodological rigor, as well as excellent scientific relevance of the editorial collocation. The congruence with the scientific sector (SSD ING/IND-13) is good.
4	Effortless creation of safe robots from modules through self-programming and self-verification	Journal paper, 4 authors. The paper exhibits excellent originality, innovativeness, and methodological rigor, as well as excellent scientific relevance of the editorial

		collocation. The congruence with the scientific sector (SSD ING/IND-13) is full.
5	Interval-Arithmetic-Based Robust Control of Fully Actuated Mechanical Systems	Journal paper, 3 authors. The paper exhibits excellent originality, innovativeness, and methodological rigor, as well as excellent scientific relevance of the editorial collocation. The congruence with the scientific sector (SSD ING/IND-13) is good.
6	Enhancing fluency and productivity in human-robot collaboration through online scaling of dynamic safety zones	Journal paper, 4 authors. The paper exhibits excellent originality, innovativeness, and methodological rigor, very good scientific relevance of the editorial collocation. The congruence with the scientific sector (SSD ING/IND-13) is full.
7	Online Computation of Time-Optimization-Based, Smooth and Path-Consistent Stop Trajectories for Robots	Journal paper, 3 authors. The paper exhibits good originality, innovativeness, and methodological rigor, as well as good scientific relevance of the editorial collocation. The congruence with the scientific sector (SSD ING/IND-13) is full.
8	Automatically Deployable Robust Control of Modular Reconfigurable Robot Manipulators	Journal paper, 2 authors. The paper exhibits excellent originality, innovativeness, and methodological rigor, as well as excellent scientific relevance of the editorial collocation. The congruence with the scientific sector (SSD ING/IND-13) is full.
9	Velocity Estimation of Robot Manipulators: An Experimental Comparison	Journal paper, 3 authors. The paper exhibits excellen originality, innovativeness, and methodological rigor, as well as excellent scientific relevance of the editorial collocation. The congruence with the scientific sector (SSD ING/IND-13) is full.
10	BIM-Integrated Collaborative Robotics for Application in Building Construction and Maintenance	Journal paper, 8 authors. The paper exhibits good originality, innovativeness, and methodological rigor, as well as good scientific relevance of the editorial collocation. The congruence with the scientific sector (SSD ING/IND-13) is full.
11	Interval-Arithmetic-Based Trajectory Scaling and Collision Detection for Robots with Uncertain Dynamics	Conference proceeding, 4 authors. The paper exhibits excellent originality, innovativeness, and methodological rigor, as well as excellent scientific relevance of the congress. The congruence with the scientific sector (SSD ING/IND-13) is full.
12	Automatic Generation of Kinematics and Dynamics Model Descriptions for Modular Reconfigurable Robot Manipulators	Conference proceeding, 3 authors. The paper exhibits excellent originality, innovativeness, and methodological rigor, as well as excellent scientific relevance of the congress. The congruence with the scientific sector (SSD ING/IND-13) is full.
13	BALTO: A BIM-Integrated Mobile Robot Manipulator for Precise and Autonomous Disinfection in Buildings against COVID-19	Conference proceeding, 10 authors. The paper exhibits excellent originality, innovativeness, and methodological rigor, as well as excellent scientific relevance of the congress. The congruence with the scientific sector (SSD ING/IND-13) is full.
14	Inverse Uncertain-Dynamics of Robot Manipulators Using Interval Arithmetic	Conference proceeding, 2 authors. The paper exhibits excellent originality, innovativeness, and methodological rigor, as well as excellent scientific relevance of the congress. The congruence with the scientific sector (SSD ING/IND-13) is full.

15	Robust Control of Continuum Robots using Interval Arithmetic	Conference proceeding, 3 authors. The paper exhibits excellent originality, innovativeness, and methodological rigor, as well as excellent scientific relevance of the congress. The congruence with the scientific sector (SSD ING/IND-13) is full.

Overall collective judgement

QUALITY OF SCIENTIFIC AND/OR PROJECT PRODUCTION, ASSESSED ON THE BASIS OF CRITERIA AND PARAMETERS RECOGNIZED BY THE INTERNATIONAL SCIENTIFIC COMMUNITY OF REFERENCE:
The candidate submitted for evaluation a selection of 10 journal papers and 5 conference proceedings. The topics covered include mechanical systems for robotic applications, mechatronic systems, control and kinematics of manipulator and collaborative robots. The presented papers are generally of a very good level. The topics are predominantly consistent with Applied Mechanics sector. The scientific relevance of the editorial collocations/proceedings are mostly very good. He does not present sole-authored papers, several works having 2-3 authors and only three papers with more than 4 authors and in all publications his contribution is relevant.

TEACHING ACTIVITIES CARRIED OUT IN ITALIAN OR FOREIGN UNIVERSITIES OR BODIES:
During the doctoral period (2014-2018) at TUM, the candidate carried out a good teaching activity, serving as a tutor (teaching assistant) and lecturer on a good number of courses related to robotics and control. Additionally, he was lecturer in 2022-2023 at the Free University of Bolzano.

SCIENTIFIC RESPONSIBILITY FOR FUNDED RESEARCH PROJECTS:
The candidate served as the local coordinator for an H2020 project and for two other projects funded by the Autonomous Province of Bolzano. Additionally, he participated as researcher/ task responsible in an adequate number of research projects funded through public grants.

RESULTS OBTAINED IN TECHNOLOGY TRANSFER IN TERMS OF PARTICIPATION IN THE CREATION OF NEW ENTERPRISES (SPIN OFF), DEVELOPMENT, USE AND MARKETING OF PATENTS:
The candidate has not presented any results in the field of technology transfer (spin-offs, patents, etc.).

SCRUTINY OF THE DEGREE OF KNOWLEDGE OF THE ENGLISH LANGUAGE:
English language proficiency is confirmed by participation in numerous international conferences, international publications, collaborations with a wide network of international scholars, as well as holding teaching positions in English.

CANDIDATE: Roveda, Loris

CURRICULUM:
The candidate holds a Bachelor's degree and a Master's degree in Mechanical Engineering from the Politecnico di Milano, and a Ph.D. in Mechanical Engineering from the Politecnico di Milano. From 2015 to 2019, they worked at STIIMA - CNR as III Level Researcher and Responsible of "Laboratory of Robotic Prototype Development". Since February 2019, he has been working at IDSIA USI-SUPSI (Istituto Dalle Molle di Studi sull'Intelligenza Artificiale), Lugano, Switzerland, Senior Permanent Researcher. He is an associate editor of different international journals, expert reviewer for several international calls and a member of international scientific committees for many international conferences.
He was a visiting researcher at Stanford University for 7 months in 2023, at Singapore University of Technology and Design (SUTD) for 2 months in 2017, at NASA-JPL for 5 months in 2013/2014, at Katholieke Universiteit, Leuven, Belgium for 2 months in 2011.
He received several national and international awards, including publication awards and travel and innovation awards. He was an invited speaker at one conference.

SUBMITTED PUBLICATIONS:

No. of publications	Type/Title of Publication	Judgment
1	Model-Based Reinforcement Learning Variable Impedance Control for Human-Robot Collaboration	Journal paper, 7 authors. The paper exhibits very good originality, innovativeness, and methodological rigor, excellent scientific relevance of the editorial collocation. The congruence with the scientific sector (SSD ING/IND-13) is full.
2	Iterative Learning Procedure With Reinforcement for High-Accuracy Force Tracking in Robotized Tasks	Journal paper, 5 authors. The paper exhibits excellent originality, innovativeness, and methodological rigor, as well as excellent scientific relevance of the editorial collocation. The congruence with the scientific sector (SSD ING/IND-13) is good.
3	Q-Learning-based model predictive variable impedance control for physical human-robot collaboration	Journal paper, 5 authors. The paper exhibits excellent originality, innovativeness, and methodological rigor, as well as excellent scientific relevance of the

		editorial collocation. The congruence with the scientific sector (SSD ING/IND-13) is good.
4	Optimal physical human–robot collaborative controller with user-centric tuning	Journal paper, 5 authors. The paper exhibits good originality, innovativeness, and methodological rigor, excellent scientific relevance of the editorial collocation. The congruence with the scientific sector (SSD ING/IND-13) is good.
5	A human-centric framework for robotic task learning and optimization	Journal paper, 6 authors. The paper exhibits excellent originality, innovativeness, and methodological rigor, as well as excellent scientific relevance of the editorial collocation. The congruence with the scientific sector (SSD ING/IND-13) is full.
6	Human–robot collaboration in sensorless assembly task learning enhanced by uncertainties adaptation via Bayesian Optimization	Journal paper, 5 authors. The paper exhibits excellent originality, innovativeness, and methodological rigor, as well as excellent scientific relevance of the editorial collocation. The congruence with the scientific sector (SSD ING/IND-13) is good.
7	Continuous control actions learning and adaptation for robotic manipulation through reinforcement learning	Journal paper, 4 authors. The paper exhibits excellent originality, innovativeness, and methodological rigor, as well as excellent scientific relevance of the editorial collocation. The congruence with the scientific sector (SSD ING/IND-13) is good.
8	Sensorless environment stiffness and interaction force estimation for impedance control tuning in robotized interaction tasks	Journal paper, 2 authors. The paper exhibits excellent originality, innovativeness, and methodological rigor, as well as excellent scientific relevance of the editorial collocation. The congruence with the scientific sector (SSD ING/IND-13) is good.
9	Robot control parameters auto-tuning in trajectory tracking applications	Journal paper, 3 authors. The paper exhibits very good originality, innovativeness, and methodological rigor, excellent scientific relevance of the editorial collocation. The congruence with the scientific sector (SSD ING/IND-13) is good.
10	Sensorless Optimal Interaction Control Exploiting Environment Stiffness Estimation	Journal paper, 4 authors. The paper exhibits excellent originality, innovativeness, and methodological rigor, as well as excellent scientific relevance of the editorial collocation. The congruence with the scientific sector (SSD ING/IND-13) is good.
11	Pairwise Preferences-Based Optimization of a Path-Based Velocity Planner in Robotic Sealing Tasks	Journal paper, 7 authors. The paper exhibits excellent originality, innovativeness, and methodological rigor, as well as excellent scientific relevance of the editorial collocation. The congruence with the scientific sector (SSD ING/IND-13) is full.
12	Optimal Impedance Force-Tracking Control Design With Impact Formulation for Interaction Tasks	Journal paper, 6 authors. The paper exhibits excellent originality, innovativeness, and methodological rigor, as well as excellent scientific relevance of the editorial collocation. The congruence with the scientific sector (SSD ING/IND-13) is full.
13	Trajectory Learning by Therapists' Demonstrations for an Upper Limb Rehabilitation Exoskeleton	Journal paper, 5 authors. The paper exhibits excellent originality, innovativeness, and methodological rigor, as well as excellent scientific relevance of the editorial collocation. The congruence with the scientific sector (SSD ING/IND-13) is full.

14	Environment-Based Assistance Modulation for a Hip Exosuit via Computer Vision	Journal paper, 8 authors. The paper exhibits excellent originality, innovativeness, and methodological rigor, as well as excellent scientific relevance of the editorial collocation. The congruence with the scientific sector (SSD ING/IND-13) is full.
15	High-accuracy robotized industrial assembly task control schema with force overshoots avoidance	Journal paper, 4 authors. The paper exhibitsvery good originality, innovativeness, and methodological rigor, excellent scientific relevance of the editorial collocation. The congruence with the scientific sector (SSD ING/IND-13) is good.

Overall collective judgement

QUALITY OF SCIENTIFIC AND/OR PROJECT PRODUCTION, ASSESSED ON THE BASIS OF CRITERIA AND PARAMETERS RECOGNIZED BY THE INTERNATIONAL SCIENTIFIC COMMUNITY OF REFERENCE:
All the selected papers submitted by the candidate are journal papers. The topics covered include robotics, control theory, robot-environment interaction modeling and control, human-robot interaction and dynamics identification and modeling. The presented papers are generally of an excellent level. These publications appear in journals that are predominantly consistent with Applied Mechanics sector. The scientific relevance of the editorial collocations is generally excellent. He does not present sole-authored papers, five works having 2-4 authors and the remaining with more than 4 authors and in all publications his contribution is relevant.

TEACHING ACTIVITIES CARRIED OUT IN ITALIAN OR FOREIGN UNIVERSITIES OR BODIES:
The candidate carried out very good teaching activities, serving as a lecturer since 2019 on a large number of courses at Politecnico di Milano, SUPSI University and eCampus University. Moreover, from 2012, he was teaching assistant for numerous courses at Politecnico di Milano.

SCIENTIFIC RESPONSIBILITY FOR FUNDED RESEARCH PROJECTS:
The candidate was the P.I. of more than 15 research projects, included an H2020 project, an EUROSTARS project and a EUROBENCH project. He was WP/Task responsible/team member of several EU and regional projects.

RESULTS OBTAINED IN TECHNOLOGY TRANSFER IN TERMS OF PARTICIPATION IN THE CREATION OF NEW ENTERPRISES (SPIN OFF), DEVELOPMENT, USE AND MARKETING OF PATENTS:
The candidate has not presented any results in the field of technology transfer (spin-offs, patents, etc.).

SCRUTINY OF THE DEGREE OF KNOWLEDGE OF THE ENGLISH LANGUAGE:
English language proficiency is confirmed by participation in numerous international conferences, international publications, collaborations with a wide network of international scholars, as well as holding teaching positions in English.

THE SELECTION BOARD

Prof. ssa TOMASINI Gisella Marita *(Chairman and Secretary)*

Prof. KUOSMANEN Petri *(Member)*

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ATTACHMENT No. 2 to the FINAL REPORT

MERIT RANKING

SURNAME AND NAME	Overall score
Roveda, Loris	86,13
Giusti, Andrea	71,47

Milan, 08/05/2024

THE SELECTION BOARD

Prof. ssa TOMASINI Gisella Marita *(Chairman and Secretary)*

Prof. KUOSMANEN Petri *(Member)*

Prof. L'AFFLITTO Andrea *(Member)*