

SELECTION OF ONE ASSOCIATE PROFESSOR FOR THE ACADEMIC RECRUITMENT FIELD 09/G2 “BIOENGINEERING” AT THE ACADEMIC CLASS OF EXPERIMENTAL AND APPLIED SCIENCES - BIOROBOTICS INSTITUTE, PURSUANT TO ART. 24, SUBSECTION 5, OF ITALIAN LAW 240/2010, ISSUED BY RECTOR DECREE NO. 145 DATED 13/03/2024.

The Committee for the evaluation of Dr. Marco Controzzi, tenure-track – probationary, Assistant Professor, in the third year of his temporary contract pursuant to Italian Law no. 240/2010, art. 24 paragraph 3 letter B, in order to promote him to Associate Professor in the Academic Recruitment Field 09/G2 “Bioengineering” at the Academic Class of Experimental and Applied Sciences and BioRobotics Institute, nominated by the Rector by decree No. 235 dated 30/04/2024 and modified by the Rector by decree No. 252 dated 08/05/2024, consists of:

- Prof. Christian Antfolk, Associate Professor at the Lund University;
- Prof. Mark Cutkosky, Full Professor at the Stanford University;
- Prof. Domenico Formica, Full Professor at the Newcastle University;
- Prof. Lorenzo Masia, Full Professor at the Heidelberg University (Germany);
- Prof. Loredana Zollo, Full Professor in the Academic Recruitment Field 09/G2 “Bioengineering” - Academic Discipline ING-IND/34 “Industrial Bioengineering” at the Campus Bio-Medico University of Rome as an expert member designated by the BioRobotics Institute.

The Committee convened on June 20, 2024, at 5 PM (Central European Time), with all the Committee members connected via teleconference from their own offices as authorized by the Rector.

Pursuant to art. 5 paragraph 2 of Legislative Decree no. 1172/1948, all members declared that they have no kinship or affinity up to the fourth grade with any of the other members and the candidate, that there are no reasons for abstention in relation to art. 51 of c.p.c. and that they are not in any situation, actual or potential, of conflict of interests with the candidates (as per art. 6 bis of the Legislative Decree No 241/1990).

Prof. Mark Cutkosky was nominated as President and Prof. Loredana Zollo as Secretary.

The Committee then reviewed the Call and especially its article 4 and agreed that the candidate shall be assessed according to the parameters established by Ministerial Decree 344/2011, in relation to the compliance of the scientific profile with the "general criteria of qualification for teaching and research required for access to professoral positions at the School" established by the

School's Commission for Recruitment and set out in article 1 of the Call.

The Committee members stated that the HR Office of the School has provided them with an electronic copy of the documentation submitted by the candidate, containing application, curriculum, publications with a declaration in lieu of an affidavit certifying compliance with the original, and a list of all the documents accompanying the application. The Committee members stated that they have examined such a documentation and made their individual assessments, which are reported in Annex 1 of these minutes.

The Committee then collectively examined the publications, curriculum and teaching activities of the candidate, confronted their individual assessments and reviewed the collegial assessment annex sub 2 attached to the minutes of which it is an integral part.

Then, after a thorough discussion, the Committee unanimously declared that Dr. Controzzi is qualified to be appointed as Associate Professor.

Given the conclusion of the selection procedure for one position of Associate Professor in the Academic Recruitment 09/G2 "Bioengineering" at the Academic Class of Experimental and Applied Sciences and BioRobotics Institute pursuant to art. 24, subsection 5 of Italian law 240/2010, the President declared the work completed.

These minutes, and the attached declarations of the Committee members connected via teleconference will be provided to the HR office in order for these proceedings to be verified, with a decree by the Rector.

The session closed at 6.00 PM (Central European Time).

Read, approved and signed,

The Committee

ANNEX 1

INDIVIDUAL ASSESSMENTS

Prof. Christian Antfolk

Academic Qualifications: Dr. Marco Controzzi possesses an academic background in Mechatronics, with a particular focus on robotic systems and their interaction with humans. His scholarly output includes more than 50 articles and a notable h-index of 29, indicating significant impact within his field. Additionally, he has successfully secured competitive grants amounting to over 1.5 million Euros and established the spin-off company Prensilia Srl, which specializes in robotic hands. He is currently working as an Assistant Professor (tenure-track) at Scuola Superiore Sant'Anna. He also has BSc and MSc degrees in Mechanical Engineering from the University of Pisa in 2005 and 2008.

Research Experience: Dr. Controzzi has performed research at a very high level within his field. He is currently focusing on two related areas (design of upper limb prosthetics and collaborative robots). He has published numerous papers in high-ranking journals as well as a large number of conference contributions. Furthermore, he has contributed significantly to several national and international research projects, from conception to conclusion. He has a large network of both national and international collaborators. He has been and is responsible for coordinating large projects. Dr. Controzzi has an excellent publication record as shown in several metrics (h-index = 29, FWCI=2.62).

Teaching and supervision ability: Dr. Controzzi has been engaged in teaching for the duration of the assessment period. Controzzi has demonstrated substantial teaching proficiency, having instructed various courses, including Rehabilitation Bioengineering and Robotic and Data-Driven Rehabilitation, at the University of Pisa and Scuola Superiore Sant'Anna. His pedagogical approach integrates theoretical and practical elements, utilizing traditional and multimedia tools. He has supervised numerous Master's and PhD students, fostering their academic and professional growth. His teaching evaluations exceed the median for PhD courses and are on par for Master's courses within his institution. He has been a member of external evaluation committee for PhD candidates, further showing proficiency and sought-after expertise in the area.

Service to the Academic Community: Dr. Controzzi has actively contributed to the academic community through participation in various committees, including PhD evaluation and recruitment committees. He serves on boards for MSc and PhD programs in BioRobotics and Bioengineering. His involvement extends to organizing and presenting at international conferences and serving as a referee for significant research funding bodies.

Contributions to Public Engagement and Technology Transfer: Dr. Controzzi has made notable contributions to public engagement and technology transfer. He founded and managed the spinoff company Prensilia SRL and has coordinated several high-value third-party projects. His involvement in technology transfer is further evidenced by his work with the Defense Industries Agency and INPECO SA. He has received recognition for his contributions, including the Compasso d'Oro award

for industrial design. Additionally, he has participated in outreach events, such as TED talks and webinars, demonstrating his commitment to disseminating scientific knowledge to the broader public.

Final assessment: Dr. Marco Controzzi's academic qualifications, extensive research experience, proficient teaching and supervision abilities, significant service to the academic community, and impactful contributions to public engagement and technology transfer render him a highly suitable candidate for promotion to Associate Professor. His innovative research in robotic systems, dedication to student development, and active engagement with both academic and industrial partners affirm his readiness for this advanced academic role. Promoting Dr. Controzzi would acknowledge his substantial achievements and enable further contributions to his field and institution.

Prof. Mark Cutkosky

Academic Qualifications: Dr. Controzzi obtained his Ph.D. in Innovative Technologies of ICT and Robotics Engineering in 2013. He was a research fellow in bioengineering from 2009 to 2014 and an assistant professor in industrial bioengineering from 2014 to 2021 at Scuola Superiore Sant'Anna. He is presently a tenure-track assistant professor in industrial bioengineering at Scuola Superiore Sant'Anna, where he is the director of Human-Robot Interaction Laboratory. He is additionally a co-founder of the company Prensilia SRL and served as CEO of the same company up to 2022.

Research Experience: Dr. Controzzi has demonstrated a prominent research track record and international visibility, especially for his work in human-robot interactions and neuro-controlled prosthetic devices. He has been a PI or Co-PI in multiple international projects and has published a collection of widely cited papers in some of the top international journals in these fields, including *Science Robotics* and *Science Translational Medicine*. He has also been invited to speak at multiple international conferences and workshops. Among the most recent of these events was his presentation on "The Journey of Mia Hand from Lab to Prosthetic Market" at a workshop on *Assistive Systems: Lab to Patient Care* at IEEE ICRA 2024 in Japan, where he presented his work on the development, testing and commercialization of the Mia prosthetic hand. I was in the audience, and I found his presentation inspiring, with useful guidance for students at Stanford working on prosthetic and robotic hands. In summary, Dr. Controzzi's research has been recognized in the international robotics community. As a scholar he has achieved a substantial impact in the field.

Teaching and supervision ability: During the assessment period, Dr. Controzzi has contributed to teaching courses on rehabilitation engineering and robotic and data-driven rehabilitation at both the University of Pisa and Scuola Superiore Sant'Anna. His teaching contributions are complemented by seminars and the supervision of 14 Master student theses and 5 PhD student projects. When I taught a couple of courses at Scuola Superiore Sant'Anna in 2021-22 I had some of his MS and PhD students in my courses and found them well informed and engaged under his mentorship.

Service to the Academic Community: Dr. Controzzi has supported the academic at Scuola Sant'Anna Superiore at large by participating in committees for admission to PhD and MSc programs and for the final examinations of Master's and PhD students.

Contributions to Public Engagement and Technology Transfer: The most prominent of Dr. Controzzi's contributions to technology transfer is his participation as a co-founder of Prensilia SRL, where he served as CEO until 2022. In this role he received the Italian award "Compasso d'Oro" for industrial design and he has contributed to several outreach events for public engagements. It is partly as a result of these efforts that he is regularly invited to speak at events like the workshop on *Assistive Systems: Lab to Patient Care* cited above.

Final assessment: In summary, Dr. Controzzi's academic qualifications, scientific contributions, teaching and supervision, service to the academic community, contributions to public engagement, and activities for technology transfer are substantial, highly respected, and prominent in the field

of assistive robotics and relevant to the field of Industrial Bioengineering. He has more than adequate qualifications for the position of Associate Professor.

Prof. Domenico Formica

Academic Qualifications: Dr. Controzzi obtained his Ph.D. in Innovative Technologies of ICT and Robotics Engineering in 2013. He was a research fellow in bioengineering from 2009 to 2014 and an assistant professor in industrial bioengineering from 2014 to 2021 at Scuola Superiore Sant'Anna. Currently, he is a tenure-track assistant professor in industrial bioengineering at the same institution. He also founded a start-up company affiliated with Scuola Superiore Sant'Anna, Prensilia SRL, where he served as CEO until 2022. Overall, he has excellent research experience in the field of biomedical engineering and possesses adequate academic qualifications for his promotion to associate professor in Industrial Bioengineering (09/G2 - ING-IND/34).

Research Experience: Dr. Controzzi has a very strong track record of research activity, demonstrated by his leadership roles in numerous national and international research projects, as well as the quality and quantity of his scientific publications in top-level international journals and conferences. Over the last three years, he participated as PI or co-PI in 2 European projects, 4 national projects, and 3 third-party sponsored projects. In the same period, he published 10 papers in top-level international journals, including 2 publications in Science Robotics, one of which as senior author. All the projects and publications are highly relevant to the field of industrial bioengineering, with a main focus on the design of bioinspired artificial limbs and techniques to improve human-robot interaction and collaboration. All the presented publications exhibit an excellent level of originality and rigorous methodology, and Dr. Controzzi's individual contribution to each of them is clear. In addition to the publications in international journals, since 2022 he also co-authored 11 papers in the proceedings of well-renowned international conferences and has been an invited speaker at 3 international workshops and symposia.

Teaching and supervision ability: During the assessment period, Dr. Controzzi contributed to teaching courses on rehabilitation engineering and robotic and data-driven rehabilitation at both the University of Pisa and Scuola Superiore Sant'Anna. His teaching activities have been continuous over the last three years and are relevant to the Industrial Bioengineering sector. His teaching contributions are complemented by several seminars and the supervision of 14 Master student theses and 5 PhD student projects.

Service to the Academic Community: Dr. Controzzi provided substantial support to the academic community at large by participating in several committees for admission to PhD and MSc programs and for the final examinations of Master's and PhD students.

Contributions to Public Engagement and Technology Transfer: Dr. Controzzi's contribution to technology transfer is clearly demonstrated by his involvement as a founding member of the spin-off company of Scuola Superiore Sant'Anna, Prensilia SRL, where he served as CEO until 2022, and as a co-inventor of an international patent. He is also the recipient of the prestigious Italian award "Compasso d'Oro" for industrial design and has contributed to several outreach events for public engagement.

Final assessment: Overall, Dr. Controzzi's academic qualifications, research and scientific contributions, teaching and supervision experience, service to the academic community, contributions to public engagement, and activities for technology transfer are excellent and highly relevant to the field of Industrial Bioengineering.

Prof. Lorenzo Masia

Academic Qualifications: Dr. Marco Controzzi has a robust academic background in bioengineering and robotics. He obtained his Ph.D. in Innovative Technologies of ICT and Robotics Engineering from Scuola Superiore Sant'Anna, with a thesis focused on the design and control of dexterous artificial hands, marked 100/100 with honors. He also holds a Master's degree in Mechanical Engineering from the University of Pisa, marked 109/110. His academic qualifications are further supported by his extensive research experience as a research fellow in bioengineering (2009-2014) and as an assistant professor without tenure track at Scuola Superiore Sant'Anna (2014-2021). Currently, he is an Assistant Professor with tenure track in Industrial Bioengineering (09/G2 - ING-IND/34). His entrepreneurial experience includes being a co-founder of the start-up company Prensilia SRL and serving as its CEO until 2022

Research Experience: Dr. Controzzi's research is centered on the design and development of advanced artificial devices, specifically robotic systems and prostheses aimed at improving human life. He has published 82 indexed articles, received 3,783 citations, and achieved an H-index of 29, indicating significant impact in his field. His research productivity includes publications in top-tier journals and contributions to national and international research projects. He has attracted and managed over 1.5 million euros in competitive grants and an additional 4.5 million euros through third-party projects.

Teaching and supervision ability: Dr. Controzzi has extensive teaching experience, having taught various courses at both the University of Pisa and Scuola Superiore Sant'Anna, including "Rehabilitation Bioengineering" and "Robotic and Data-Driven Rehabilitation".

He has consistently received positive evaluations from students, scoring above the median for PhD courses and equal for Master's degrees. Dr. Controzzi has also supervised numerous PhD and master's students, guiding them through complex research projects and fostering their academic growth. His role in evaluating PhD and MSc theses further demonstrates his commitment to education and mentorship.

Service to the Academic Community: Dr. Controzzi has actively contributed to the academic community through various roles. He has served on evaluation committees for PhD and MSc defenses, participated in recruitment committees, and been a member of the PhD and MSc boards in BioRobotics. Additionally, he has been involved in organizing and speaking at national and international conferences, enhancing the visibility and impact of his work and that of his institution.

Contributions to Public Engagement and Technology Transfer: Dr. Controzzi has made significant contributions to public engagement and technology transfer. He is a founding member and former CEO of Prensilia SRL, a company that commercializes robotic hands. Under his leadership, the company developed the Mia Hand, a prosthetic hand that won the prestigious Compasso d'Oro award. He has also been involved in various high-profile projects with the Defense Industries Agency and INPECO SA, managing substantial budgets and coordinating complex activities. His work has resulted in practical applications that benefit both academia and industry.

Final assessment: Dr. Marco Controzzi's comprehensive academic qualifications, impactful research, effective teaching, dedicated service to the academic community, and significant contributions to technology transfer and public engagement make him an outstanding candidate for promotion to Associate Professor. His work not only advances the field of bioengineering but also translates into real-world applications.

Dr. Controzzi exemplifies the qualities of an Associate Professor through his high and concrete achievements and ongoing commitment to research, education, and societal impact. His promotion is highly recommended based on his distinguished record and potential for continued contributions to academia and at the Scuola Superiore Santa Anna.

Prof. Loredana Zollo

Academic Qualifications: The candidate has adequate academic qualifications as he holds a PhD in Innovative Technologies of ICT and Robotics Engineering (2013), has relevant research experience as research fellow of bioengineering (2009-2014) and assistant professor without tenure track at Scuola Superiore Sant'Anna (2014 – 2021), where he presently is Assistant Professor with tenure track in Industrial Bioengineering (09/G2 - ING-IND/34) and head of the Human-Robot Interaction Laboratory. He is also one of the founders of the spin-off company Prensilia SRL and CEO of the same company up to 2022. In 2018 Dr. Controzzi obtained the National Scientific Qualification for Associate Professor of Bio-engineering.

Research Experience: The candidate has carried out high level research activity, as demonstrated by the number of national and international research projects he has contributed to in the field of biorobotics, also with roles of responsibility. In the contract period, he has published ten articles in high-quality international journals, relevant to the sector of Industrial Bioengineering. The publications showed a high level of originality and rigorous methodology. The individual contribution was clear and in many of them the candidate is last author, confirming a considerable independence. He also published eleven contributions to proceedings in international conferences.

Dr. Controzzi holds an excellent track record of publications in biorobotics, especially human-robot interaction and limb prosthetics, showing originality, very good citational impact and relevance to the sector of Industrial Bioengineering. He has been invited speaker at three international events, demonstrating his good international reputation.

Teaching and supervision ability: In the contract period, Dr. Controzzi has carried out continuous teaching activity in courses for Master Students at University of Pisa and Scuola Superiore Sant'Anna, relevant to the Industrial Bioengineering sector. His teaching activities have been positively evaluated, with a score in line or above the median value for Scuola Superiore Sant'Anna courses. He has also carried out adequate seminar activities in the sector of Industrial Bioengineering. Furthermore, he has mentored two visiting students, has been tutor of many honours college students at Scuola Superiore Sant'Anna, supervisor of fourteen Master students and five PhD students. All these activities are relevant to the sector of Industrial Bioengineering.

Service to the Academic Community: He has adequate experience and actively contributed to service to the Academic Community, as demonstrated by participation to several committees for the admission to PhD and MSc Programs and the final examination of Master and PhD students.

Contributions to Public Engagement and Technology Transfer: He has been the inventor of one international patent in the contract period in the Industrial Bioengineering sector and contributed to three third-party projects with considerable funding. Moreover, he is founding member of the Spin-Off company Prensilia SRL and served as CEO until August 2022. Finally, he was awarded with a prestigious Italian award on industrial design.

Final assessment: Overall, Dr Controzzi's research activity, academic qualifications, teaching experience, supervising experience, service to the academic community, contribution to public

engagement and technology transfer are considered of high level and relevant to the sector of Industrial Bioengineering. His promotion to Associate Professor is strongly recommended.

ANNEX 2

COLLEGIAL ASSESSMENT

Academic Qualifications: Dr. Controzzi has earned a PhD in Innovative Technologies of ICT and Robotics Engineering in 2013. Subsequently, he was research fellow of bioengineering and assistant professor without tenure track at Scuola Superiore Sant'Anna. Since August 2021 he holds the role of Assistant Professor with tenure track in Industrial Bioengineering (09/G2 - ING-IND/34). In 2018 Dr. Controzzi obtained the National Scientific Qualification for Associate Professor of Bio-engineering.

Research Experience: Dr. Controzzi has contributed to several national and international research projects in the area of biorobotics, also with leading positions. He has been an invited speaker at three international events and published original studies in very good peer-reviewed journals (e.g., Science Robotics, IEEE Robotics and Automation Letters, IEEE Transactions on Neural Systems and Rehabilitation Engineering, Nature Scientific Data).

Teaching and supervision ability: The Candidate has lectured extensively in the field of Bioengineering teaching in courses for Master Students at University of Pisa and Scuola Superiore Sant'Anna. He has delivered many seminars and have tutored/supervised visiting scholars, Master and PhD students through their educational activities, Master and PhD theses. All the performed activities are of high level e relevant to the Industrial Bioengineering.

Service to the Academic Community: Within the timeframe of his contract, the Candidate has been involved in numerous academic committees, contributing to the assessment processes of master's and doctoral students in his field.

Contributions to Public Engagement and Technology Transfer: During the contract term, the candidate has filed one relevant international patent and contributed to three third-party projects. He is also founding member of the spin-off company Prensilia SRL and served as CEO until August 2022. Finally, he was awarded with a prestigious Italian award on industrial design.

Final assessment: Dr. Controzzi is recognized as a high-level profile in the research field of biorobotics, especially in the areas of limb prosthetics and human-robot interaction. He has a very good publication record in prominent journals. He has achieved high-quality results throughout his contract across the three missions of universities, i.e. Research, Teaching and Third mission. His comprehensive contributions across research, education, mentorship, academic service, public engagement, technology transfer, and dissemination are relevant and deeply integrated within the field of Bioengineering. We unanimously support the promotion to Associate Professor with tenure.