

**SELECTION OF ONE PROFESSOR (LEVEL 1 – PROFESSORE ORDINARIO), FOR THE ACADEMIC RECRUITMENT FIELD 09/G2 "BIOENGINEERING" AT THE INSTITUTE OF BIOROBOTICS - ACADEMIC CLASS OF EXPERIMENTAL AND APPLIED SCIENCES, RESERVED, PURSUANT TO ART. 24, SUBSECTION 6, OF ITALIAN LAW 240/2010, FOR ASSOCIATE PROFESSORS AND RESEARCHERS EMPLOYED AT THE SCHOOL, ISSUED BY RECTOR DECREE NO. 614 DATED 04/10/2021.**

**MINUTES OF THE SECOND MEETING**

The Review Committee for the selection of one professor (level 1) for the Academic Recruitment Field 09/G2 "Bioengineering" – Academic Discipline ING-IND/34 "Industrial Bioengineering" at the Institute of BioRobotics of the Scuola Superiore Sant'Anna di Pisa reserved for associate professors and researchers employed at the School to be selected pursuant to art. 24, subsection 6 of the Italian law 240/2010, nominated by the Rector by decree No. 667 dated 20/10/2021, consists of:

- Prof. Christian Cipriani, Professor of the Academic Recruitment Field 09/G2 "Bioengineering" at the Scuola Superiore Sant'Anna, designated expert by the BioRobotics Institute;
- Prof. Luca Citi, Professor at the University of Essex;
- Prof. Alberto Di Minin, Professor of the Academic Recruitment Field 13/B2 "Management" at the Scuola Superiore Sant'Anna, Member of the Recruitment Committee;
- Prof. Eugenio Guglielmelli, Professor of the Academic Recruitment Field 09/G2 "Bioengineering" at the Campus Bio-Medico University of Rome;
- Prof. Filippo Molinari, Professor of the Academic Recruitment Field 09/G2 "Bioengineering" at the Politecnico of Torino;
- Prof. Heike Vallery, Professor at the TU Delft.

The Committee convened for the second time, via teleconference, on November, 18, 2021, at 1 p.m. from the following locations:

Prof. Cipriani located in Pontedera, Italy, connected via teleconference: MS Teams.

Prof. Citi located in London, UK, connected via teleconference: MS Teams.

Prof. Di Minin located in Pisa, Italy, connected via teleconference: MS Teams.

Prof. Guglielmelli located in Milan, Italy, connected via teleconference: MS Teams.

Prof. Molinari located in Turin, Italy, connected via teleconference: MS Teams.

Prof. Vallery located in Delft, The Netherlands connected via teleconference: MS Teams.

The President, having ascertained the presence of all the members, opened the session and verified that the assessment criteria defined in the previous session had been published on the website of the School.

The members of the Committee states that the Personnel Office of the School has provided them with an electronic copy of the documentation submitted by the applicant containing: application, curriculum, publications with a declaration in lieu of an affidavit certifying compliance with the original, letters of recommendation, and a list of all the documents accompanying the application.

The members of the Committee state that they have examined the publications, curriculum and teaching activities of the candidate and made their individual assessments, which are reported in Annex 1 of these minutes.

The Committee then examines the publications, curriculum and teaching activities of the candidate, confronts their individual assessments and reviews the collegiate assessment annexes sub 2 attached to the minutes of which they are an integral part.

Then after a full discussion, **unanimously** the Committee declares that the winning candidate is: Nicola Vitiello

*Prof. Di Minin testifies that the evaluation of the candidates, the presentation of the individual assessments, the ensuing discussion and, in general, the whole procedure occurred in full compliance with the rules established by Scuola Sant'Anna and its recruitment committee.*

The Committee then draws up a report summarizing the work carried out.

Given the conclusion of the The Review Committee for the selection of one Full professors for Recruitment Field 09/G2 "Bioengineering" – Academic Discipline ING-IND/34 "Industrial Bioengineering" at the Institute of BioRobotics of the Scuola Superiore Sant'Anna di Pisa reserved for associate professors and researchers employed at the School to be selected pursuant to art. 24, subsection 6 of the Italian law 240/2010, the President declared the work closed.

These minutes, drawn up and signed by the President and the attached declarations of the Committee's members will be sent the Personnel Office in order for these proceedings to be verified, with a decree by the Rector.

The session closed at 2 PM.

Read, approved and signed,

The President

Prof. Christian Cipriani



## **ATTACH 1 – INDIVIDUAL ASSESSMENTS**

### **Prof. Filippo Molinari**

Prof. Nicola Vitiello has been very active in teaching since he became Assistant Professor, at all BSc, MSc and PhD level. His effort in teaching is also demonstrated by several additional lectures in post-graduate initiatives and summer schools. Impressive is the number of MSc students and PhD candidates supervised.

Prof. Vitiello has an excellent publication track record in top robotics, mechatronics and rehabilitation engineering journals and conferences: about 30% of his publications are in the top 10% journals, according to Scopus data base; the percentage of publications in Q1 (top 25%) journals is over 60%. Positive is the trend of the number of publications where he is the last (senior) author, demonstrating his increasing seniority and scientific maturity.

Prof. Vitiello has been incredibly active in taking part to national and international research activities: his international visibility is mostly demonstrated by his participation as PI to 5 EU projects, and the role of scientific project coordinator of 2 EU projects. Brilliant is also his commitment to management of intellectual property and consequent transfer to the market of developed IP, as demonstrated by the success story of the spin-off company IUVO, of which he is the main co-founder. A final remark is about his role of Associate Editor in the journal *Wearable Technologies* (by Cambridge University Press), a recently established journal which aims at becoming a reference journal in the field of wearable technologies/robotics.

As a consequence, I express my full support to the recruitment of prof. Nicola Vitiello as Professore Ordinario (Level 1 Italian University Professor) at Scuola Superiore Sant'Anna.

### **Prof. Eugenio Guglielmelli**

Prof. Vitiello has been very active in teaching, with courses at all level: BSc, MSc and doctoral. Notably, he has also been invited lecturer in several workshops and summer schools.

Prof. Vitiello has an excellent publication record in top robotics, mechatronics and rehabilitation journals, and conference proceedings. His scientific production collocates him among the most prominent scientists in field of wearable robotics if we look at the total number of citations and the field-weighted Citation Impact computed on the scientific production of the last 10 years. Notably, about 33% of its publications are collocated in the top 10% most cited publications worldwide field weighted.

Prof. Vitiello has shown an incredible capability to attract research funds: in his career at Scuola Superiore Sant'Anna he has given a fundamental contribution to secure about 14 M€ for his university, of which about 8.3 M€ were for the research activities of the wearable robotics laboratory, of which he is the principal investigator. The story of IUVO, the spin-off company co-funded by prof. Vitiello, represents clearly a success-story of open innovation, and a reference model for technology transfer actions in the field of wearable robotics, and –more generally– for new innovative enabling mechatronic technologies.

The above analysis brings me to conclude that prof. Vitiello is a suitable candidate for becoming a Professore Ordinario in a prestigious university such as Scuola Superiore Sant'Anna.

**Prof. Luca Citi**

I have reviewed the application and assessed the candidate's performance in conformity to the criteria identified in the preliminary meeting, as detailed in the following (note: for each area of assessment, I indicate in square brackets the corresponding criteria being met).

*Teaching, supplementary teaching and service to students*

In the last 8 years, Dr Vitiello has been responsible for teaching BSc, MSc and/or PhD courses [b]. In the same period he has supervised or tutored 16 PhD candidates and 38 MSc students [a]. He is also member of the Teaching Committee of the PhD Programme in "Bioingegneria e bioscienze – DOT13A0534", Università Campus Bio-Medico di Roma, Rome, Italy [c].

*Publications such as articles published in journals in paper or digital format, with the exception of internal notes or departmental reports*

Dr Vitiello has an excellent track record in terms of number, quality and editorial collocation of his scientific articles, mostly in the field of wearable robotics, mechatronics and rehabilitation engineering [b,c]. Excellent is also the methodological rigour and relevance of the selected publications [a,b]. The analysis of the publication activity through quantitative indicators (such as number of citations, h-index, etc) shows an impressive profile, which is significantly higher than the cluster of associate professors in the same field and well positioned within the cluster of full professors [d,e].

*Research activity, exploitation, and industrial leadership*

The candidate has explored several research strands of wearable robotics, both across application domains and target anatomical districts. He has an impressive experience in leading both national and international collaborative research initiatives [a]. He presented his work at national and international top conferences in his field [b]. He has won a number of national and international awards [c]. Impressive is also the number and quality of the patent applications [d], of which several have been licensed to a spin-off company of Scuola Superiore Sant'Anna of which Dr Vitiello is one of the co-founders [e].

On the basis of the above considerations, his solid teaching experience, his strong scientific reputation and the brilliant results achieved in technology transfer activities, I strongly and fully believe that Dr Nicola Vitiello is an excellent candidate for the position of Professore Ordinario.

### **Prof. Heike Vallery**

I have not had the opportunity to see prof. Vitiello giving a lecture to his students. However, I had several opportunities to see him giving speeches at internal workshops and project meetings: my judgement is that he has excellent communication skills. He is always to the point and capable of conveying complex subjects in an understandable and engaging manner. His commitment to teaching activities is undoubtedly demonstrated by the courses he is owner of and the number and quality of the MSc/PhD students supervised/tutored.

Dr. Vitiello is an internationally leading researcher in the field of wearable robotics and rehabilitation engineering. This is reflected in his scientific track record, which is undoubtedly in line with what is expected for a professor of his standing. Despite his relatively young academic age, he has published 84 articles (indexed by Scopus) and has an h-index equal to 37. He is publishing in the top journals in the fields of robotics (Science Robotics, Transactions on Robotics, and Transactions on Mechatronics, etc.) and Rehabilitation Engineering (Transactions on Neural Systems and Rehabilitation Engineering, Journal of Neuroengineering and Rehabilitation, etc.). He is also co-inventor of more than 20 patents/patent applications, some of which have been licensed to the spin-off company IUVO S.r.l., of which prof. Vitiello is one of the co-founders. Prof. Vitiello is ideally suited for the academic position of Professore Ordinario. His outstanding leadership and scientific contributions in several EU and National projects made him an internationally recognized scientist. At EU level, he has demonstrated a strong capability to attract research funds in competitive FP7/H2020 calls for projects and has been the leading scientist of the CYBERLEGS projects, which can be considered pioneering initiatives in the development of powered orthoses and prostheses for improving the quality of life of lower-limb amputees. These projects also opened up very interesting commercialization opportunities, making sure that the developed technology reaches the individuals who can benefit from it.

Given all the above, I strongly recommend the recruitment of prof. Nicola Vitiello as Full Professor (Professore Ordinario) at Scuola Superiore Sant'Anna, without any reservations.

### **Prof. Christian Cipriani**

Prof. Vitiello is owner of courses for both BSc, MSc and PhD students. His teaching load is in line with what is requested to a Full Professor. His teaching obligation is complemented by an impressive effort in supervision/tutoring of both undergraduate and PhD students.

Scientific production of prof. Vitiello is far beyond what is requested to a Full Professor. It is clear to me that this is the result of a large research group that prof. Vitiello has established at Scuola Superiore Sant'Anna, where he is also nursing/mentoring new leaders (both assistant professors and post-doc fellows). Its international scientific reputation is also corroborated by his role of guest editors of special issues in prestigious robotics and rehabilitation journals, as well as of associate editor of a recently-founded journal by Cambridge University Press.

Prof. Vitiello is a well-established researcher, well connected and well-known in the international community of wearable robotics due to the quality and quantity of research challenges addressed by a critical mass of researchers under his lead. Quite uncommonly his scientific work is complemented by a strong commitment to translate the results of his research activities into products, thus literally moving his research prototypes beyond the laboratory boundaries.

Following my statements, I have no doubt to strongly encourage Scuola Superiore Sant'Anna to recruit prof. Vitiello as Full Professor.

**Prof. Alberto Di Minin**

It was a real pleasure to review the materials presented by Prof Nicola Vitiello to document his promotion to Full Professor. Vitiello represents a clear example of “engaged scholar” in the sense that in his career he has been able to clearly complement rigorous work and actionable results. The first dimension can be clearly documented by his publication track record, as well as the opinions expressed by peers with respect to his work in the fields of robotics, bio robotics, neuro-robotics, rehabilitation robotics and wearable robotics. He is both very productive, able to engage a diverse set of respectable coauthors, and his research is receiving quite some traction in terms of citations. As a result it is not surprising to me he has been able to provide evidence of his unique capacity to get research funding and to enhance in original ways his own independent research agenda.

Also, the second dimension of his work can be clearly documented by his technology transfer and his innovation activities. What is important to point out from the perspective of a management scholar such as myself it is not only the success of Prof Vitiello’s entrepreneurial activities, but Nicola’s ability, as a researcher, to take a step back when necessary, in order to allow his research results to take a step forward towards the market. This is a fundamental ingredient for the implementation of a science-based open innovation practice.

Reviewing Vitiello’s profile I think Nicola represents the perfect example of a faculty who fits in the Pasteur’s Quadrant of Donald Stokes famous book, and hence his scholarship is absolutely consistent with the tradition of Scuola Sant’Anna. I am convinced that as a Full Professor, Nicola is going to be able to give a tremendous contribution to the leadership of this institution.

I strongly support his promotion.

## **ATTACH 2 – COLEGIATE ASSESSMENTS**

In accordance with the Italian Ministerial Decree 344/2011 and with the criteria agreed upon by the evaluation committee at the preliminary meeting, the following criteria have been taken into consideration:

- 1) Teaching, supplementary teaching, and service to the students,
- 2) Publications such articles published in journals in paper or digital format, with the exception of internal notes or departmental reports,
- 3) Research activities, exploitation, and industrial leadership.

With respect to the first criterion, the teaching activity of the candidate is fully in line with expectations. He conceived several courses and supervised/tutored many MSc and PhD students.

With respect to the second criterion, the overall scientific production of the candidate is outstanding and continuous over time. Presented publications are innovative and relevant to the profile of the call.

With respect to the third criterion, the candidate showed strong capabilities of coordination of a research group, as well as of principal investigator of several international and national research projects. He has an outstanding record of technology transfer activities.

Overall, the profile of the candidate is outstanding with respect to all the indicators listed above. Therefore, the Committee fully agrees for the academic recruitment of the candidate Nicola Vitiello to the position of Professore Ordinario (Level 1 Italian University Professor).