

Prof. Niccolò Grossi

Associate professor (SSD: IIND-04/A)

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Education

2015: PhD in Industrial Engineering, University of Florence, “Modelling and simplification methods for machine tool dynamics prediction in high-speed milling” Supervisor: Prof Scippa, External examiner: Prof Altintas
 2011: MSc in Mechanical Engineering, University of Firenze “Simplified methods for machine tool dynamic simulation” Supervisor: Prof Dr Scippa. (110/110 and magna cum laude)

Academic positions

Sept 2025 – now: Associate Professor, Dept. of Industrial Engineering, University of Firenze
 Sept 2022 – Aug 2025: Tenured Assistant Professor, Dept. of Industrial Engineering, University of Firenze
 Aug 2018 – Aug 2022: Junior Assistant Professor, Dept. of Industrial Engineering, University of Firenze
 Jan 2015 – Jul 2018: Postdoctoral fellow, Dept. of Industrial Engineering, University of Firenze
 Jan 2013 – Jul 2013: Visiting student, Manufacturing Automation Laboratory, University of British Columbia, Vancouver (Canada), Supervisor: Prof Dr Yusuf Altintas
 Jan 2012 - Dec 2014: PhD student, Dept. of Industrial Engineering, University of Firenze

Teaching experience

2023 – now Co-chair of “Efficient and Sustainable Manufacturing technologies” course, Mechanical Engineering for Sustainability, University of Firenze (3CFU).
 2021 – now Co-chair of “Manufacturing Processes” course, Mechanical Engineering, University of Firenze (9CFU).
 2017 – now Chair of “Manufacturing Studies” course, Mechanical Engineering, University of Firenze (6 CFU)
 2013 – now Supervisors or co-supervisors of research activities of student’s thesis (4 PhDs, 22 Masters and 29 Bachelors) and researchers.
 2018 – now Lecturer of Experimental Modal Analysis seminar for doctoral course of Industrial Engineering, University of Firenze (6 CFU)
 2018 – 2021 Co-chair of “Manufacturing Processes” course, Management Engineering, University of Firenze, in charge of process planning part (3CFU).
 2014 – 2017, Assistance to the Manufacturing Processes course, Mechanical Engineering, University of Firenze, chair: Prof Dr Antonio Scippa, lectures and exams.
 2013 – 2017, Course of Finite Element Modelling (FEM), Istituto Tecnico Superiore Prime, Firenze, specialization school on manufacturing technologies for high school graduate students, lecturer and supervisor.

Research areas and results

My research, published both on peer-reviewed scientific journals and conference proceedings, has been focused on:

- Studying simplified strategies for modelling machine tool dynamics, hybrid modelling (e.g., receptance coupling) and position/orientation dependent dynamics;
- Developing cutting process simulation methods and cutting forces models in milling: cutting force coefficients identification, thin-wall machining cutting parameters optimization, machined surface prediction.
- Developing chatter-free cutting parameters identification strategies both experimentally and numerically;
- Dynamics compensation methods for accurate measurements in machining (e.g., cutting forces, sound);
- Developing active devices for chatter suppression in machining operations (e.g., milling, boring);
- Studying modelling strategies for Wire Arc Additive Manufacturing (WAAM) process.
- Developing and modelling of the dot-by-dot WAAM process.

Scientific activities

- Academic coordinator of the Machining for Aerospace (M4A) group of the Associazione Italiana Tecnologia Meccanica (AITeM)
- Member of the Industrial Engineering PhD Council, University of Firenze
- Member of the Review Group for the School of Industrial Engineering, University of Firenze
- Member of the Scientific Committee of International conference on High Speed Machining (HSM) 2019, Prague, International conference on High Speed Machining (HSM) 2021, Darmstadt.
- Speaker in scientific conferences, among which: AITeM conference (2013,2015,2017,2019,2023), MTTRF conference (2012,2013,2014,2016,2018), CIRPe (2016), CIRP HPC (2014), HSM (2019)
- Lecturer on Dynamics on Machining Operations for engineering professional association of Arezzo, 2017
- Invited lecture at CISM at the advanced school “Dynamics of machining: prediction and suppression of undesired vibrations” supervised by prof. G. Stepan, Udine, 10th May 2019
- Lecturer AITeM Academy Specialized Training on “Reduction of Undesired Vibrations in Machining”, Udine, 23-24th October 2025

- Lecturer AITeM Academy 2023, 2024, 2025
- Associate Editor for “Frontiers in Manufacturing Technology”
- Member of the Advisory Board of “Engineering Proceedings”
- Member of the Topical Advisory Panel of the “Journal of Manufacturing and Materials Processing”
- Reviewer for industrial research project of Provincia Autonoma di Trento call.
- Reviewer for Ministero dell’Università e Ricerca, MUR, within PRIN 2020 call.
- Member of the University of Florence CTS (Scientific Technical Committee) for PRIN 2022 projects
- Reviewer for Chilean National Science and Technology Commission (CONICYT – Chile), within FONDECYT Regular 2019 grant competition.
- Reviewer for international scientific journals, among which: International Journal of Machine Tools and Manufacture, Mechanical Systems and Signal Processing, Precision Engineering, CIRP Journal of Manufacturing Science and Technology, The International Journal of Advanced Manufacturing Technology, Machining Science and Technology.

Research products, bibliometric data and patents

Author of more than 70 scientific papers, published in international journals, conference proceedings, book chapters. 58 papers indexed in Scopus. H index = 21, total number of citations = 1444 (March 2026). Inventor of one patent “Active piezoelectric tool, active piezoelectric device and operating method of the active piezoelectric tool”. 2024; US Patent App. 18/256,863.

Relevant involved research projects

- 2025 – now, DoTPOWER - “Digital Twin for Processing and Optimizing WAAM Engineered lattice structures”, Research Unit Supervisor of the project that aims at developing a Digital Twin of the dot-by-dot WAAM process, call PRIN 2022 SC. Funded by MUR
- 2023 – 2026, CIRCULAR WELD, Principal Investigator of the project that aims at investigating dot-by-dot WAAM process for civil application in the circular economy, call PRIN 2022 PNRR. Funded by MUR
- 2023 – 2026, IGA4Stent project aiming at applying isogeometric analysis to shape optimization of 4D printed stents, RTD open call. Funded by University of Firenze (PNRR)
- 2022 – 2026, Tuscany Health Ecosystem (THE) project, participant in the Spoke 3, sub-project 16, with the aim of investigating 4D printing technologies for patient-tailored stents. Funded by MUR (PNRR)
- 2022 – 2023, DRITTO project, aiming at developing an easy-to-use digital twin-based solution to support manufacturing (i.e., turning) of slender axisymmetric components. Funded by EU (H2020).
- 2019 – 2021, RETROFIX project with the aim of developing a retrofit prototype to include Wire Arc Additive Manufacturing technology on an existing milling machine. Funded by MANUNET-ERANET.
- 2018 – 2020, DAMP IT –The project aimed at realizing an active boring bar for chatter suppression. Funded by Regional authority (POR-FESR 2014-202).
- 2017 – 2018 BEinCPPS – PrIMaCy – The project aimed at developing a tailored Predictive Maintenance (PdM) solution for CNC machine tools. Funded by EU (H2020).
- 2014 – 2018 FACTS4WORKERS – The project aimed at designing process analysis and interface to improve the efficiency of the production system and the worker’s involvement. Funded by EU (H2020).
- 2015 – 2016 INTEFix – The experiment in charge of University of Firenze aimed at developing an active fixture for chatter suppression in milling. Funded by EU (FP7).
- 2012 – 2015 ATENE – Project for the increase of the efficiency in manufacturing in the energy sector (coordinator Baker Hughes General Electric). Funded by Regional authority (PAR-FAS).

Research grants funded by private companies or public institutions

Member of the MTRL research group participating on several research agreements since 2012, among which:

- 2024 Scientific Supervisor of the research contract with NUOVO PIGNONE TECNOLOGIE s.r.l. for the development of a chatter detection and spindle speed selection algorithm in milling
- 2022 Participation to research contract activities with ROBORIS s.r.l. for a tool wear model development.
- 2021 Scientific Supervisor of the research contract with NUOVO PIGNONE TECNOLOGIE s.r.l. for the testing of the active tool device prototype.
- 2012 – 2020 Participation to MTTRF - Machine Tool Technologies Research Foundation activities, sponsored by DMG MORI, that loaned the research group machine tools for education and research.
- 2020 Scientific Supervisor of the research contract with NUOVO PIGNONE TECNOLOGIE s.r.l. for the development of a tool device prototype for active suppression of chatter in turning operations.
- 2019 Scientific Supervisor of the research contract with NUOVO PIGNONE TECNOLOGIE s.r.l. for the dynamic analysis and definition of application of piezoelectric tool for active damping.
- 2017-2019 Participation to research contract activities with NUOVO PIGNONE TECNOLOGIE s.r.l. for investigating milling monitoring systems and 5-axis milling strategies.

2017 Participation to research contract activities with GKN DRIVELINE FIRENZE for the realization of predictive maintenance system.

Awards and Fellowships

Aug 2023: Principal Investigator of a successful proposal in MUR PRIN 2022 PNRR call (CIRCULAR WELD)

Mar 2018: Seal of Excellence for H2020-MSCA-IF-2017 proposal

Apr 2017: Seal of Excellence for H2020-MSCA-IF-2016 proposal

Feb 2017: Finalist in RIS3Toscana on Industry 4.0 “Intelligent device for vibrations mitigation in milling”

2013 – now. Member of Associazione Italiana Tecnologia Meccanica (AITeM)

Firenze, 22/03/2026