

Curriculum Vitae

General information

Title: Prof.

Surname: **Cocconcelli**

First name: **Marco**

Citizenship: Italian

Sex: Male

University: University of Modena and Reggio Emilia

Department: Department of Sciences and Methods of Engineering

Position: Associate Professor

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Google Scholar: <https://scholar.google.it/citations?user=R4uqLeUAAAAJ&hl=it>

Scopus: <https://www.scopus.com/authid/detail.uri?authorId=26423532300>

1. Research activity

The research activity concerned:

- Lumped parameter modeling for the cinetoelastodynamic simulation of mechanical systems, i.e. rolling bearings, flexible coupling, independent carriage systems.
- Monitoring and diagnostics of rotating machine in stationary and non-stationary conditions through vibration analysis: gears, rolling bearings, knives, elastic joints.
- History of mechanism and machine science
- Education in mechanism and machine science

2. Training

Academic training:

- 23/10/2003.
Bachelor and Master degree in Mechanical Engineering, specialization in Industrial Automation and Robotics, at the University of Bologna.
Title of the thesis: " On the kinematic and dynamic modeling of the human knee ",
Supervisor: Prof. V. Parenti Castelli.
- 22/05/2007.
Ph.D. in Mechanical Applied Mechanics, at the University of Bologna.
Title of the thesis: " Plane mechanisms with play: places with constant maximum position error ", Supervisor: Prof. V. Parenti Castelli.
- 2007 to date. 12 thematic courses on topics related to Applied Mechanics.
- 31/05/2021 – 31/05/2032. Italian scientific habilitation for full-professor position.

3. Publications

Publications on the last 5 years (source: Scopus):

1. Strozzi, M., Elishakoff, I.E., Bochicchio, M., **Cocconcelli, M.**, Rubini, R., Radi, E., *A comparison of shell theories for vibration analysis of single-walled carbon nanotubes based on an anisotropic elastic shell model*, *Nanomaterials*, 2023, 13(8), 1390
2. Pancaldi, F., Dibiasse, L., **Cocconcelli, M.**, *Impact of noise model on the performance of algorithms for fault diagnosis in rolling bearings*, *Mechanical Systems and Signal Processing*, 2023, 188, 109975
3. Mottola, G., **Cocconcelli, M.**, *Nomograms in the history and education of machine mechanics*, *Foundations of Science*, 2023
4. Spaggiari, A., **Cocconcelli, M.**, Castagnetti, D., Dragoni, E., Rubini, R., *Synthesis and optimization of an eight-bar linkage mechanism for seat suspensions*, *Journal of the Brazilian Society of Mechanical Sciences and Engineering*, 2022, 44(9), 429
5. Ceccarelli, M., **Cocconcelli, M.**, *Italian Historical Developments of Teaching and Museum Valorization of Mechanism Models*, *Machines*, 2022, 10(8), 628
6. Soave, E., D'Elia, G., **Cocconcelli, M.**, Battarra, M., *Blind deconvolution criterion based on Fourier–Bessel series expansion for rolling element bearing diagnostics*, *Mechanical Systems and Signal Processing*, 2022, 169, 108588
7. **Cocconcelli, M.**, Strozzi, M., Cavalaglio Camargo Molano, J., Rubini, R., *Detectivity: A combination of Hjorth's parameters for condition monitoring of ball bearings*, *Mechanical Systems and Signal Processing*, 2022, 164, 108247
8. Mottola, G., **Cocconcelli, M.**, *Nomograms: An Old Tool with New Applications*, *History of Mechanism and Machine Science*, 2022, 40 HMMS, pp. 314–329
9. Fonte, C., **Cocconcelli, M.**, *Dynamic Analysis of a Semi-automatic Telegraph Key*, *History of Mechanism and Machine Science*, 2022, 40 HMMS, pp. 382–394
10. Mottola, G., **Cocconcelli, M.**, Rubini, R., Carricato, M., *Gravity Balancing of Parallel Robots by Constant-Force Generators*, *Mechanisms and Machine Science*, 2022, 115, pp. 229–273
11. Capelli, L., Massaccesi, G., Molano, J.C.C., Campo, F., Borghi, D., Rubini, R., **Cocconcelli, M.**, *A Structured Approach to Machine Learning Condition Monitoring*, *Applied Condition Monitoring*, 2022, 19, pp. 33–54
12. Molano, J.C.C., Campo, F., Capelli, L., Massaccesi, G., Borghi, D., Rubini, R., **Cocconcelli, M.**, *A Structured Approach to Machine Learning for Condition Monitoring: A Case Study*, *Applied Condition Monitoring*, 2022, 19, pp. 55–76
13. Borghi, D., **Cocconcelli, M.**, *Future Challenges in Condition Monitoring from an Industrial Perspective: The Case of the Independent Carts Systems*, *Acoustics Australia*, 2021, 49(2), pp. 259–263
14. Pancaldi, F., Rubini, R., **Cocconcelli, M.**, *Time-varying metrics of cyclostationarity for bearing diagnostic*, *Mechanical Systems and Signal Processing*, 2021, 151, 107329
15. **Cocconcelli, M.**, *The Italian Textbooks of Mechanics Applied to Machines in the Modern Age*, *Mechanisms and Machine Science*, 2021, 91, pp. 46–54
16. Buzzoni, M., D'Elia, G., **Cocconcelli, M.**, *A tool for validating and benchmarking signal processing techniques applied to machine diagnosis*, *Mechanical Systems and Signal Processing*, 2020, 139, 106618
17. Cavalaglio Camargo Molano, J., Capelli, L., Rubini, R., Borghi, D., **Cocconcelli, M.**, *A bearing fault model for Independent Cart Conveyor System and its validation*, *Applied Acoustics*, 2020, 159, 107069
18. Strozzi, M., **Cocconcelli, M.**, Rubini, R., Genchi, G., Zanella, A., *Condition monitoring and reliability of a resistance spot welding process*, *Proceedings of the 30th European Safety and Reliability Conference and the 15th Probabilistic Safety Assessment and Management Conference*, 2020, pp. 3453–3460

19. Molano, J.C.C., Scurria, L., Fonte, C., **Cocconcelli, M.**, Tamarozzi, T., *Virtual training of machine learning algorithm using a multibody model for bearing diagnostics on independent cart system*, Proceedings of ISMA 2020 - International Conference on Noise and Vibration Engineering and USD 2020 - International Conference on Uncertainty in Structural Dynamics, 2020, pp. 2013–2024
20. D'Elia, G., **Cocconcelli, M.**, Strozzi, M., Mucchi, E., Dalpiaz, G., Rubini, R., *Motor current cyclic-non-stationarity analysis for bearing diagnostic*. Proceedings of ISMA 2020 - International Conference on Noise and Vibration Engineering and USD 2020 - International Conference on Uncertainty in Structural Dynamics, 2020, pp. 597–607
21. Strozzi, M., Giacomobono, R., Rubini, R., **Cocconcelli, M.**, *Preliminary orthotropic elastic model for the study of natural frequencies and mode shapes of a 3D printed Onyx thin circular cylindrical shell*. International Journal of Mechanics and Control, 2020, 21(2), pp. 51–62
22. Strozzi, M., Rubini, R., **Cocconcelli, M.**, *Condition Monitoring Techniques of Ball Bearings in Non-stationary Conditions*, Lecture Notes in Mechanical Engineering, 2020, pp. 565–576
23. Immovilli, F., Lippi, M., **Cocconcelli, M.**, *Automated Bearing Fault Detection via Long Short-Term Memory Networks*, Proceedings of the 2019 IEEE 12th International Symposium on Diagnostics for Electrical Machines, Power Electronics and Drives, SDEMPED 2019, 2019, pp. 452–458, 8864866
24. **Cocconcelli, M.**, Cavalaglio Camargo Molano, J., Rubini, R., Capelli, L., Borghi, D., *Bearing fault model for an independent cart conveyor*, Applied Condition Monitoring, 2019, 15, pp. 211–220
25. **Cocconcelli, M.**, Rubini, R., Pancaldi, F., Capdessus, C., Comparison of metrics for peaks enhancement in variable speed conditions, Mechanisms and Machine Science, 2019, 68, pp. 482–489

4. Education

4.1 Academic courses

Period	Course	Level	ECTS/course
2005 - Today	Complementi di cinematica e dinamica delle macchine (Advances on kinematics and machine dynamics)	Master degree on mechatronic engineering	6
2011 - 2013	Elementi di Diagnostica delle Macchine (Machine diagnostics)	Master degree on mechatronic engineering	3
2012 - 2013	Elementi di biomeccanica (Biomechanics)	Bachelor degree on management engineering	3
2015 - 2019	LabVIEW Academy	Bachelor degree on mechatronic engineering	3
2019 - Today	Meccanica applicata alle macchine (Applied mechanics)	Bachelor degree on mechanical engineering	6

2019 - Today	Meccanica delle macchine e delle strutture (Mechanics of machines and structures)	Bachelor degree on management engineering	3
2022 - Today	Elementi di Meccanica con laboratorio (Elements of Mechanics with laboratory)	Inter-university bachelor degree in Medical Systems Engineering for the person	6
2022 - Today	Multibody simulation and Experimental Modal Analysis	Master degree on digital automation engineering	6

4.2 Ph.D. course

Member of the board of the PH.D. School in Industrial Innovation Engineering of the Department of Sciences and Engineering methods of the University of Modena and Reggio Emilia.

Supervisor of the Ph.D. candidate: Abdul Jabbar (2022-2024)

Supervisor of the Ph.D. candidate: Cosimo Fonte (2021-2023)

Supervisor of the Ph.D. candidate: Jacopo Cavalaglio Camargo Molano (2016-2019)

With reference to research topics on condition monitoring, diagnostics of mechanical systems, and robotics, he has taken part to PhD juries for:

- University of Bologna, Italy
- University of Padua, Italy
- University of Ferrara, Italy
- Polytechnic of Turin, Italy
- University of Pretoria, South Africa
- University of New South Wales, Australia

4.3 Post-graduate supervision

Supervisor of more than 160 master (40%) and bachelor (60%) theses on the topics of monitoring and diagnostics of rotating machines, dynamic characterization of materials, vibration isolation in the packaging industry and in the automotive and biomedical sectors, analysis of human gait.

5. Research projects

- Unimore Supervisor: The European Training Network on “Monitoring Large-Scale Complex Systems” (MOIRA) – H2020 Marie Skłodowska-Curie grant agreement n° 955681
- Researcher: " DEfLECT - DEep LEarning Condition moniToring ". Department research project of the University Research Fund (FAR) 2018.
- Researcher: “Integrated and collaborative systems for the intelligent factory (ICOSAF)”, European project: PON R&I 2014-2020.
- Researcher: “Smart Autonomous Robotic Assistant Surgeon (SARAS)”, Horizon 2020 project: H2020-EU.2.1.1.- Industrial leadership, H2020-ICT-2017-1.

- Researcher: “Smart and adaptive interfaces for inclusive work environment (INCLUSIVE)”, Horizon 2020 project: H2020-EU.2.1.5.1.- Technologies for Factories of the Future, H2020-FOF-2016.
- Scientific coordinator: "Study and dynamic modeling of independent manipulators moving along closed paths". Department research project of the University Research Fund (FAR) 2016.
- Researcher: Regional Operational Program (Emilia-Romagna) of the European Regional Development Fund 2007-2013 - Axis 1, activity 1.1
- Researcher: Program European LIFE + Environment Policy and Governance 2008 - Innovative Chain for Energy Recovery from Waste in Natural Parks (LIFE-RELS)
- Researcher: Regional Program for Industrial Research, Innovation and Technology Transfer - Inter Laboratory for Advanced Mechanics Emilia Romagna - Laboratory of Acoustics and Vibrations - Sub OR1: vibro-acoustic diagnostics

6. Technology transfer

Research collaboration and technology transfer with various national and international companies in the area. The topics concerned the kinematic and dynamic optimization of the machines, the reduction of vibrations, the measurement of the vibrational state of components, diagnostics and monitoring of machines.

- Patents: 5 (source: Google patents)

7. International activities and collaborations

- Invited researcher at the PRISME Laboratory of the University of Orleans, Chartres, France. From 17 May 2018 to 15 June 2018.
- Invited researcher at the PRISME Laboratory of the University of Orleans, Chartres, France. From 18 May 2023 to 15 June 2023.
- Reviewer for magazines and international project proposals on the topic of diagnostics of mechanical components: 150 revisions till today.
- Participation in international conferences in the field of diagnostics and monitoring of mechanical components.
- Co-organizer of the 3rd International Conference on Condition Monitoring of Machinery in Non- Stationary Operations (CMMNO2013), Ferrara, 8-10 May 2013.
- Co- Editor of the book: "Advances in Condition Monitoring of Machinery in Non-Stationary Operations", Springer, 2014.
- Co-Editor of “Vibration Measurement and Diagnostics”, a special issue of Applied Sciences (ISSN 2076-3417)
- Member of the Editorial board of Shock and Vibrations, Hindawi publishing.
- Member of scientific board of:
 - International conference on acoustics and vibration (ICAV)
 - International conference on Condition Monitoring of Machinery in Non-Stationary Operations (CMMNO)
 - International Congress on Technical Diagnostics (ICTD)
 - International Conference on System Reliability and Safety (ICSRS)

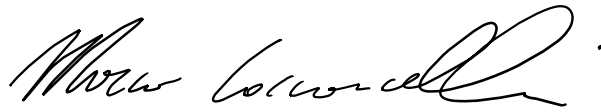
8. Bibliometric indexes

Bibliographic indexes at: 31/05/2023

Scopus - Citations: 712; H-index: 12

Google Scholar - Citations: 1149; H-index: 16

Chartres (FR), 31/05/2023

A handwritten signature in black ink, appearing to read 'Marco Cocconcelli', with a small dot at the end of the signature.

Prof. Marco Cocconcelli
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