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Lorenzo Caselli

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LinkedIn: Lorenzo Caselli

Passport: YC3142497 **Gender:** Male **Date of birth:** 06/08/1998 **Place of birth:** Forli, Italy **Nationality:** Italian

WORK EXPERIENCE

[01/03/2025 – Current] **Visiting Researcher**

KU Leuven

City: Leuven | **Country:** Belgium

The objective of this research is to investigate the dynamic behavior of long, curved slender rotors with elastic bushings, with a specific focus on the study of:

- **Rubbing phenomena**: Initiation, evolution, and effects on system response.
- **Internal stability**: Onset of instability due to internal damping, rotor curvature, and support flexibility.
- **Coupled dynamics**: Interaction between structural curvature, support compliance, contact dynamics and internal damping.

Practical objectives include:

- Adaptation of analytical/numerical models to capture these effects.
- Parametric studies to evaluate the influence of curvature, bushing properties, and operating conditions.
- Validation of the model through comparison with literature and experimental data available.

[20/07/2022 – 08/08/2022] **Internship - Research & Development**

IEMCA a Bucci Automations S.p.A. Division https://www.iemca.com

Address: via Granarolo, 167, 48018, Faenza, Italy | **Business or sector:** Manufacturing

- Test rig experimentation and data acquisition
- Preprocessing and analysis of vibrational data for Condition Monitoring
- Study of machine learning classifiers
- Modelling of numerical-analytical dynamic models

[10/05/2020 – 25/07/2020] **Internship - Mechanical Designer**

Mark One s.r.l https://www.3dmarkone.com/en/home-2/

Address: via Albert Einstein, 22, 47025, Cesena (FC), Italy | **Business or sector:** Manufacturing

- Mechanical and automation systems design
- Conceptual design
- Rapid prototyping

[31/10/2019 – 20/02/2020] **Internship - University Project**

ALMA MATER STUDIORUM - Università di Bologna

City: Forlì (FC) | **Country:** Italy

- Design methods of pneumatic systems
- Study of electro-pneumatic systems
- Creation of instructions for the design and construction of electro-pneumatic systems

[12/06/2016 – 16/07/2016]

Internship - Mechanical Designer

Motion S.p.A.

City: Forlì | **Country:** Italy

Technical Office Tasks

- Design assisitant
- Prototype design
- Technical drawing and 3D modeling

Practical Tasks

- Prototype testing supervision
- Quality control

Seasonal Worker - Agriculture

Societa' Agricola Buzzi Fausto e Angela S.s.

City: Forlì | **Country:** Italy

- Laborer
- Direct sales to customers

EDUCATION AND TRAINING

[01/11/2022 – Current]

PhD

ALMA MATER STUDIORUM - Università di Bologna https://www.unibo.it/sitoweb/lorenzo.caselli7

Address: Via Zamboni, 33, 40126, Bologna, Italy | **Field(s) of study:** Mechanics and Advanced Engineering Sciences | **Level in EQF:** EQF level 8

- Modelling for dynamical systems
- Vibration analysis
- Diagnostic, prognostic and fault identification
- Data analysis, acquisition and processing (vibrations and acoustics)
- Numerical integration
- Finite elements methods for dynamical systems
- Modal analysis, experimental and theoretical
- Condition monitoring
- Prediction models for dynamic systems in industrial applications

[09/2020 – 13/10/2022]

Master in Mechanical Engineering (Automation and Robotics)

ALMA MATER STUDIORUM - Università Di Bologna https://corsi.unibo.it/magistrale/IngegneriaMeccanica-Forli

Address: Via Zamboni, 33, 40126, Bologna, Italy | **Field(s) of study:** Automation Mechanics | **Final grade:** 110 e lode | **Level in EQF:** EQF level 7 | **Type of credits:** CF U | **Number of credits:** 120 | **Thesis:** Studio di metodologie per il condition monitoring di caricatori automatici di barre per torni CNC

- Dynamics and vibration of mechanical systems
- Production and design with composite materials
- Business logistics
- Control theory and industrial automation
- Electrical machines and drives
- Fault diagnosis (predictive maintenance)

- Industrial robotics
- Design methods for the automation and industry

[08/2017 – 10/2020] **Bachelor's Degree in Mechanical Engineering**

ALMA MATER STUDIORUM - University of Bologna https://corsi.unibo.it/laurea/IngegneriaMeccanicaForli

Address: Via Zamboni, 33, 40126, Bologna, Italy | | **Final grade:** 110 e Lode | **Level in EQF:** EQF level 6 | **Type of credits:** CFU | **Number of credits:** 180 | **Thesis:** PROGETTAZIONE DI UN SISTEMA DI CARICAMENTO AUTOMATICO DEL FILAMENTO DI UNA STAMPANTE 3D

- Solid foundations in mechanics, kinematics and dynamics of rigid bodies
- Static-structural analysis
- Electrical engineering
- 3D modeling and technical drawing
- Thermodynamics and fluid dynamics
- Energy plants
- Properties and treatments of metals
- Business and production organization
- Design of mechanical components and structures
- Principles of business economics
- Technical and economy approach to problem solving

[08/2012 – 08/2017] **Technical Diploma**

Industrial Technical Institute "G. Marconi" https://www.ittmarconiforli.edu.it/

Address: Viale della Libertà, 14, 47120, Forlí, Italy | | **Final grade:** 97

- Mechanical and Materials Technologies
- Mechanical Design
- Machining
- Business Management
- Automation Principles

LANGUAGE SKILLS

Mother tongue(s): Italian

Other language(s):

English

LISTENING C1 **READING** C2 **WRITING** C1

SPOKEN PRODUCTION C1 **SPOKEN INTERACTION** C1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

CONFERENCES AND SEMINARS

[09/09/2024 – 11/09/2024] **31th International Conference on Noise and Vibration Engineering - ISMA2024** Leuven, Blegium

On the numerical modelling of a rotor system to support the analysis of experimental vibration signals for the condition monitoring of a cn lathe integrated with an automatic bar feeder

[02/07/2023 – 07/07/2023] **20th International Conference on Experimental Mechanics** Porto, Portugal

Correlation between Roughness of Turned Workpieces and Vibration Signature of the Lathe Bed

[14/07/2023] **XV GIORNATA DI STUDIO “ETTORE FUNAIOLI”** Bologna, Italy

[19/07/2024] **XVI GIORNATA DI STUDIO “ETTORE FUNAIOLI”** Bologna, Italy

[07/06/2024] **Workshop Metodi Innovativi NVH per l'Industria 4.0** Ferrara, Italy

Influence of bending vibrations of rotating bars on the surface quality of CNC lathes

SKILLS

Microsoft Office | Posta elettronica | Utilizzo del broswer | Social Network | Stampa 3D

Linguaggio ISO

CREO 3D | SolidWorks | MATLAB | ADAMS - multibody simulation | ANSYS - FEM analysis | MATLAB - Simulink/Simscape | Inventor 3D | Rhinoceros 7

TECHNICAL SKILLS AND COMPETENCE

Ingegneristiche

- Design
- Research
- Engineering
- Numerical computing
- Data acquisition
- Data processing
- Machine learning
- Modeling

Manuali

- Machine tools (parallel and CNC lathe, milling machine, hob, ...)
- Assembly and maintenance

DRIVING LICENCE

Cars: B

MANAGEMENT SKILLS

University

- Organization of study and design groups in the university environment (e.g. Alma-X mechanical group)
- Organization of study plans aimed at research and experimentation.
- Drafting of Gantt charts for managing times and tasks.

Company

Management of experimental and prototype activities in collaboration with technical figures in a corporate context

COMMUNICATION AND INTERPERSONAL SKILLS

Teamworking

- Teamworking in groups and collaboration
- Assignment of tasks and objectives, taking into account the capabilities and expectations of the members of the group
- Coordination between working groups